

ホーニングツール選定ガイド

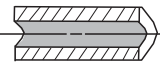
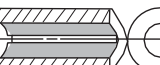
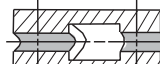
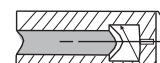
ホーニングツール選定方法

各個別アプリケーションに適合するホーニングユニットの選定は、穴のタイプ、寸法、材質、要求公差などに左右されます。ホーニングユニットのグループ選定については、下記の表から行うことができます。マンドレルおよびストーンの選定については表内に示されたカタログページにて行います。ストーンと面粗度の資料については、P188 および189をご参照下さい。

ホーニングツールの選定には、下記の2ステップに沿って行ってください。

1. 加工しようとしている穴形状に最も近いと思われるスケッチを特定します。
2. その行の中で、加工しようとしている径範囲に合うマスに記載されているページに移動し、ホーニングツールの選定を行います。

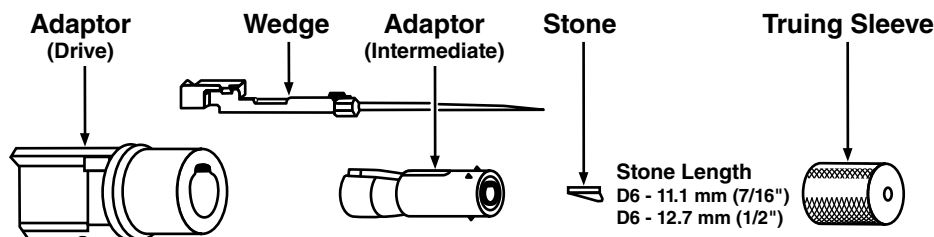
：砥石長さがスケッチ部に記載の必要条件に合っているか、また、座繰りがある穴の場合、必要ツール長が確保されているかを確認して下さい。寸法は、各ホーニングツールのページに記載されています。

穴形状、および ホーニングユニット要件		穴径範囲								穴径																
		1.52 ~ 2.54mm .060"-.100"	2.54 ~ 3.05mm .100"-.120"	3.05 ~ 3.81mm .120"-.150"	3.81 ~ 4.70mm .150"-.185"	4.70 ~ 6.22mm .185"-.245"	6.22 ~ 7.82mm .245"-.308"	7.82 ~ 9.40mm .308"-.370"	9.40 ~ 12.57mm .370"-.495"	12.57 ~ 15.72mm .495"-.619"	15.72 ~ 18.90mm .619"-.744"	18.90 ~ 19.68mm .744"-.775"	19.68 ~ 25.48mm .775"-.1.000"	25.40 ~ 26.19mm 1.000"-.1.031"	26.19 ~ 31.75mm 1.031"-.1.250"	31.75 ~ 34.93mm 1.250"-.1.375"	34.93 ~ 44.45mm 1.375"-.1.750"	44.45 ~ 69.85mm 1.750"-.2.750"	69.85 ~ 92.08mm 2.750"-.3.625"	92.08 ~ 101.60mm 3.625"-.3.875"	101.60 ~ 152.40mm 3.875"-.6.000"					
 貫通穴で中断等のない場合	短い穴 (L×D≤9)	D2 pgs. 6-7	K3 pgs. 8-9	K4 pgs. 12-13	K5 pgs. 16-17	K6 pg. 20	K8 pg. 24	K10 pg. 28					K12 pg. 32	K16 pg. 36	K20 pg. 40	AK20 pg. 44	AK20 pg. 44	P28 pgs. 54-58 AK20 pg. 44	P28 pgs. 54-58 AK20 pg. 44	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58 AN-600 pg. 132	P28 pgs. 54-58 AN-600 pg. 132	P28 pgs. 54-58 AN-600 pg. 132
	長い穴 (L×D>9)	D2 pgs. 6-7	BL3 pgs. 10-11	BL4 pgs. 14-15	BL5 pgs. 18-19	BL6, L6 pgs. 22-23	BL8, L8 pgs. 26-27	BL10, L10 pgs. 30-31						BL12, L12 pgs. 34-35	BL16, L16 pgs. 38-39	BL20, L20 pgs. 42-43 P20 pgs. 48-53	BAL20, AL20 pgs. 46-47 P20 pgs. 48-53	BAL20, AL20 pgs. 46-47 P20 pgs. 48-53	BAL20, AL20 pgs. 46-47 P20 pgs. 48-53	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58		
 貫通穴でキー溝やスプラインがある場合	キー溝のような中断のある穴にはキー溝用マンドレルを選定します。穴長さが2/3～1.5倍の砥石長さが適正です。止まり穴には適しません。					Y8, YY8 pgs. 60-61	Y10, YY10 pgs. 62-63						Y12, YY12 pgs. 64-65	Y16, YY16 pgs. 66-67	Y20 pgs. 68-69 YY24 pgs. 72-73	Y20 pgs. 68-69 YY24 pgs. 72-73	AAY20 pgs. 70-71	Y32 pgs. 74-75 YY32 pgs. 76-77	Y32 pgs. 74-75 YY32 pgs. 76-77	Y32 pgs. 74-75 YY32 pgs. 76-77	Y44 pgs. 78-79 YY48 pgs. 80-81	Y56 pgs. 82-83 Y72 pgs. 84-85	Y88 pgs. 86-87 Y104 pgs. 88-89 AN-600 pg. 132	Y104 pgs. 88-89 AN-600 pg. 132	AN-600 pg. 132	
 貫通穴で、間欠がある場合	間欠のある穴の場合、間欠部分の距離の少なくとも2倍の長さをもつ砥石の選定が必要です。適切な長さの砥石が見つからない場合、185ページを参照の上砥石を追加加工してください。	D2 pgs. 6-7	K3 pgs. 8-9 BL3 pgs. 10-11	K4 pgs. 12-13 BL4 pgs. 14-15	K5 pgs. 16-17 BL5 pgs. 18-19	K6 pg. 20 BL6, L6 pgs. 22-23	K8 pg. 24 BL8, L8 pgs. 26-27	K10 pg. 28 BL10, L10 pgs. 30-31					K12 pg. 32 BL12, L12 pgs. 34-35	K16 pg. 36 BL16, L16 pgs. 38-39	K20 pg. 40 BL20, L20 pgs. 42-43 P20 pgs. 48-53	AK20 pg. 44 BAL20, AL20 pgs. 46-47 P20 pgs. 48-53	AK20 pg. 44 BAL20, AL20 pgs. 46-47 P28 pgs. 54-58	P28 pgs. 54-58 AK20 pg. 44	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P28 pgs. 54-58	P20 pgs. 48-53	P20 pgs. 48-53
 止まり穴	穴の長さの2/3倍の長さのツールを選定します。選定したツールが長すぎる場合は、184ページを参照の上、砥石を追加加工して短くして下さい。ツールが穴底に十分届く長さであることを確認して下さい。		K3 pgs. 8-9 BL3 pgs. 10-11	K4 pgs. 12-13 BL4 pgs. 14-15	K5 pgs. 16-17 BL5 pgs. 18-19	K6 pg. 20 JK6 pg. 21 BL6 pg. 22 L6 pg. 23	K8 pg. 24 JK8 pg. 25 BL8 pg. 26 L8 pg. 27	K10 pg. 28 JK10 pg. 29 BL10 pg. 30 L10 pg. 31					K12 pg. 32 JK12 pg. 33 BL12, L12 pgs. 34-35	K16 pg. 36 JK16 pg. 37 BL16, L16 pgs. 38-39	K20 pg. 40 JK20 pg. 41 BL20, L20 pgs. 42-43	AK20 pg. 44 JAK20 pg. 45 BAL20, AL20 pgs. 46-47	AK20 pg. 44 JAK20 pg. 45 BAL20, AL20 pgs. 46-47	AK20 pg. 44 JAK20 pg. 45 BAL20, AL20 pgs. 46-47 R28 pg. 59	AK20 pg. 44 JAK20 pg. 45 BAL20, AL20 pgs. 46-47 R28 pg. 59	R28 pg. 59	R28 pg. 59	R28 pg. 59 AN-600 pg. 132	R28 pg. 59 AN-600 pg. 132	R28 pg. 59 AN-600 pg. 132	R28 pg. 59 AN-600 pg. 132	
 曲がった穴	穴の曲がり修正には、穴の1.5倍長いツールを選定します。正しくストロークの取れるツール長が確保されていることを確認して下さい。ガイドシュのあるツールの方が、ガイドシュの無いツールよりもよく曲がりを矯正します。																									
 座繰りや逃げのある穴	マンドレルが加工部に十分届き、砥石の約1/3の長さの適正なオーバーストロークを取れる長さであることを確認して下さい。座繰りが片方にしかない場合、また公差がそれ程厳しくない場合、反対側からの加工だけで十分な精度が得られる場合があり、その場合は通常の穴の場合と同じ選定で構です。																									

1-800-325-3670

D2 Honing Units

Diameter Range:
1,52 mm – 2,54 mm
.060" – .100"



Note: D2 Mandrels cannot be modified for blind holes.

Order 1-5 For Complete D2 Honing Units

Diameter Range 1,52 mm – 2,54 mm .060" – .100"		1 D2 Mandrel Wedge not included			1 D2-L Mandrel Wedge not included			2 Wedge		3 Truing Sleeve		D2A-S Adapter Set 1 Each	
		With Standard Shank Choose One Suffix			With Extra-Long Shank Choose One Suffix			W-Standard Length WL-Extended Length Choose One Suffix				Drive Adapter	Intermediate Adapter
1,524-1,575	.060-.062	D2A-060	S	H	D2A-060L	S+	H+	D2A	-W	-WL	S-060	D2-A	D2-I
1,575-1,626	.062-.064	D2A-062	S	H	D2A-062L	S+	H+	D2A	-W	-WL	S-062	D2-A	D2-I
1,626-1,676	.064-.066	D2B-064	S	H	D2B-064L	S+	H+	D2B	-W	-WL	S-064	D2-A	D2-I
1,676-1,727	.066-.068	D2B-066	S	H	D2B-066L	S+	H+	D2B	-W	-WL	S-066	D2-A	D2-I
1,727-1,778	.068-.070	D2C-068	S	H	D2C-068L	S+	H+	D2C	-W	-WL	S-068	D2-A	D2-I
1,778-1,829	.070-.072	D2C-070	S	H	D2C-070L	S+	H+	D2C	-W	-WL	S-070	D2-A	D2-I
1,829-1,880	.072-.074	D2D-072	S	H	D2D-072L	S+	H+	D2D	-W	-WL	S-072	D2-A	D2-I
1,880-1,930	.074-.076	D2D-074	S	H	D2D-074L	S+	H+	D2D	-W	-WL	S-074	D2-A	D2-I
1,930-1,981	.076-.078	D2E-076	S	H	D2E-076L	S+	H+	D2E	-W	-WL	S-076	D2-A	D2-I
1,981-2,032	.078-.080	D2E-078	S	H	D2E-078L	S+	H+	D2E	-W	-WL	S-078	D2-A	D2-I
2,032-2,083	.080-.082	D2F-080	S	H	D2F-080L	S+	H+	D2F	-W	-WL	S-080	D2-A	D2-I
2,083-2,134	.082-.084	D2F-082	S	H	D2F-082L	S+	H+	D2F	-W	-WL	S-082	D2-A	D2-I
2,134-2,184	.084-.086	D2F-084	S	H	D2F-084L	S+	H+	D2F	-W	-WL	S-084	D2-A	D2-I
2,184-2,235	.086-.088	D2F-086	S	H	D2F-086L	S+	H+	D2F	-W	-WL	S-086	D2-A	D2-I
2,235-2,286	.088-.090	D2F-088	S	H	D2F-088L	S+	H+	D2F	-W	-WL	S-088	D2-A	D2-I
2,286-2,337	.090-.092	D2F-090	S	H	D2F-090L	S+	H+	D2F	-W	-WL	S-090	D2-A	D2-I
2,337-2,388	.092-.094	D2F-092	S	H	D2F-092L	S+	H+	D2F	-W	-WL	S-092	D2-A	D2-I
2,388-2,438	.094-.096	D2F-094	S	H	D2F-094L	S+	H+	D2F	-W	-WL	S-094	D2-A	D2-I
2,438-2,489	.096-.098	D2F-096	S	H	D2F-096L	S+	H+	D2F	-W	-WL	S-096	D2-A	D2-I
2,489-2,540	.098-.100	D2F-098	S	H	D2F-098L	S+	H+	D2F	-W	-WL	S-098	D2-A	D2-I

Mandrels in this size range use D6 stones. Order from D6 stone selection table at right.

Mandrels in this size range use D8 stones. Order from D8 stone selection table at right.

Mandrel Options

S = Steel Mandrel w/ soft shoes, for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.

* 1st choice
** 2nd choice. Use if A65 does not cut.
*** 3rd choice. Use if A63 does not cut.

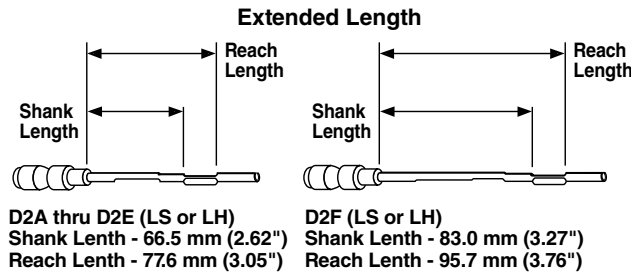
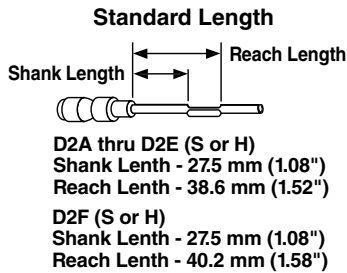
Recommended Stones for D2A-060 thru D2E-078 Mandrels

Material	Low-Volume		High-Volume	
	Stone to use	Approx. Ra Surface Finish µm µin	Stone to use	Approx. Ra Surface Finish µm µin
Deburring: rough holes, all materials				
	D6-A67	—	D6-A67	—
Fast removal: deburred, bored, ground, reamed holes				
Aluminum	D6-J67	0,83 33	D6-DM87	1,25 50
Brass, Soft	D6-J63	0,83 33	D6-J63	0,83 33
Bronze	D6-J67	0,83 33	D6-J67	0,83 33
Carbide	D6-DM57	0,50 20	D6-DM57	0,05 20
Cast Iron	D6-J67	0,30 12	D6-DM57	2,00 80
Ceramic	D6-DM57	1,00 40	D6-DM57	1,00 40
Glass	D6-DM57	1,75 70	D6-DM57	1,75 70
Steel, Soft	D6-A67	0,50 20	D6-NM69	1,00 40
Steel, Hardened*	D6-A65	0,30 12	D6-NM69	0,70 28
Steel, Hardened**	D6-A63	0,30 12	—	—
Steel, Very	D6-NM69	0,70 28	—	—
Fine finishing: previously honed holes				
Aluminum	D6-J95	0,15 6	D6-DM07	0,83 33
Brass, Soft	D6-J93	0,30 12	D6-J93	0,30 12
Bronze	D6-J95	0,30 12	D6-J95	0,30 12
Carbide	D6-DR07	0,08 3	D6-DM07	0,08 3
Cast Iron	D6-J95	0,13 5	D6-DM07	0,50 20
Ceramic	D6-DR07	0,38 15	D6-DM07	0,38 15
Glass	D6-DR07	0,38 15	D6-DM07	0,38 15
Steel, Soft	D6-J95	0,10 4	D6-NM89	0,65 7
Steel, Hardened	D6-J93	0,08 3	D6-NM89	0,50 3

* Special Order - Contact Customer Service

D2 Honing Units

Mandrels



In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

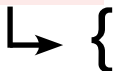
Available Stones

		Grit Size							
		150	220	280	320	400	500	600	900 1200
H---S	H---S	Aluminum Oxide Stones (A) - 12 per box							
				D6-A63 D6-A65 D6-A67					
	H---S			D8-A63 D8-A65 D8-A67					
H---S	H---S	Silicon Carbide Stones (J,C) - 12 per box							
				D6-J63 D6-J65 D6-J67		D6-J93 D6-J95 D6-J97		D6-C05	
	H---S			D8-J63 D8-J65 D8-J67		D8-J93 D8-J95 D8-J97		D8-C05	
Hard-----Soft	Hard-----Soft	Diamond (D) & CBN Stones (N) - Metal (M), Resin (R), Vitrified (V) Bond - 1 per box							
		D6-DM55 D6-DM57		D6-DR67		D6-DM87		D6-DR07 D6-DM07	
	Hard-----Soft			D6-NR63		D6-NR83			
		D6-NM55 D6-NM57		D6-NM65 D6-NM67 D6-NM69		D6-NM85 D6-NM87 D6-NM89	D6-NM95	D6-NM05 D6-NM07	
Hard-----Soft	Hard-----Soft			D8-DR67				D8-DR07	
		D8-DM55 D8-DM57				D8-DM87 D8-NR83		D8-DM05 D8-DM07	
	Hard-----Soft			D8-NM63					
		D8-NM55 D8-NM57		D8-NM65 D8-NM67 D8-NM69		D8-NM85 D8-NM87 D8-NM89		D8-NM05 D8-NM07	

Recommended Stones for D2F-080 thru D2F-098 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm	µin	Stone to use	Approx. R _a Surface Finish µm	µin
Deburring: rough holes, all materials						
	D8-A67	—	—	D8-A67	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	D8-J67	0,83	33	D8-DM87	1,25	50
Brass, Soft	D8-J65	0,83	33	D8-J65	0,83	33
Bronze	D8-J67	0,83	33	D8-J67	0,83	33
Carbide	D8-DM57	0,50	20	D8-DM57	0,50	20
Cast Iron	D8-J67	0,30	12	D8-DM57	2,00	80
Ceramic	D8-DM57	1,00	40	D8-DM57	1,00	40
Glass	D8-DM57	1,75	70	D8-DM57	1,75	70
Steel, Soft	D8-A67	0,50	20	D8-NM69	1,00	40
Steel, Hardened*	D8-A65	0,30	12	D8-NM67	0,70	28
Steel, Hardened**	D8-A65	0,30	12	—	—	—
Steel, Very	D8-NM67	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	D8-J95	0,15	6	D8-DM07	0,83	33
Brass, Soft	D8-J95	0,30	12	D8-J93	0,30	12
Bronze	D8-J95	0,30	12	D8-J95	0,30	12
Carbide	D8-DR07	0,08	3	D8-DM07	0,08	3
Cast Iron	D8-J95	0,13	5	D8-DM07	0,50	20
Ceramic	D8-DR07	0,38	15	D8-DM07	0,38	15
Glass	D8-DR07	0,38	15	D8-DM07	0,38	15
Steel, Soft	D8-J95	0,10	4	D8-NM89	0,65	7
Steel, Hardened	D8-J95	0,08	3	D8-NM87	0,50	3

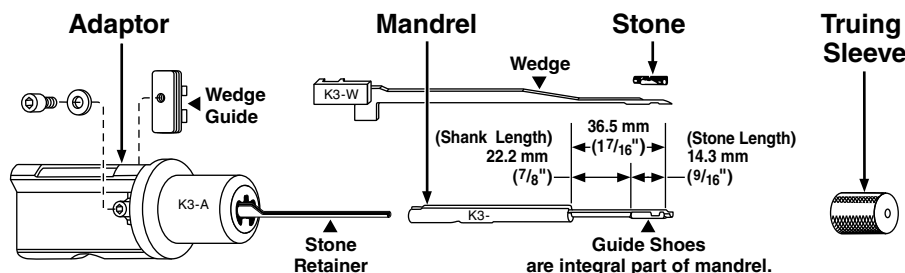
* 1st choice
** 2nd choice. Use if A65 does not cut.
*** 3rd choice. Use if A63 does not cut.



K3

Honing Units

Diameter Range:
2,54 mm – 3,05 mm
.100" – .120"



Order 1-5 For Complete K3 Honing Units

Diameter Range 2,54 mm - 3,05 mm .100" - .120"		1 K3 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
		With Standard Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
2,54-2,59	.100-.102	K3-100C	S H B	S-100	K3-A	C-100
2,59-2,64	.102-.104	K3-102C	S H B	S-102	K3-A	C-102
2,64-2,69	.104-.106	K3-104C	S H B	S-104	K3-A	C-104
2,69-2,74	.106-.108	K3-106C	S H B	S-106	K3-A	C-106
2,74-2,79	.108-.110	K3-108C	S H B	S-108	K3-A	C-108
2,79-2,84	.110-.112	K3-110C	S H B	S-110	K3-A	C-110
2,84-2,90	.112-.114	K3-112C	S H B	S-112	K3-A	C-112
2,90-2,95	.114-.116	K3-114C	S H B	S-114	K3-A	C-114
2,95-3,00	.116-.118	K3-116C	S H B	S-116	K3-A	C-116
3,00-3,05	.118-.120	K3-118C	S H B	S-118	K3-A	C-118

See
All Stone
Tables
At Right

Mandrel Options

S = Steel Mandrel w/ soft shoes, for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for producing very fine finishes and honing exotic metals.

K3 Mandrel Replacement Parts

K3-W Wedge
 Replace when wear *begins* to show.
LN-3025C Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some honing applications. Another advantage of Super Mandrels is faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. Select appropriate soft steel mandrel and add-D.+

Example: K3-100CS-D.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

K3

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box											
	Hard-----Soft					K3-A55 K3-A57	K3-A61 K3-A63 K3-A65 K3-A67 K3-A69 K3-A611	K3-A75 K3-A77 K3-A79					
	Hard-----Soft	Silicon Carbide Stones (J,C) - 12 per box											
	Hard-----Soft						K3-J63 K3-J65 K3-J67		K3-J83 K3-J85 K3-J87 K3-J89	K3-J93 K3-J95 K3-J97 K3-J99	K3-C05†		
	Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vittrified (V) Bond - 1 per box											
	Hard-----Soft				K3-DMB45 K3-DM47	K3-DM55 K3-DM57 K3-DV57			K3-DM85 K3-DM87		K3-DM05 K3-DM07 K3-DV07		K3-DR007
	Hard-----Soft				K3-NM45 K3-NM49	K3-NR53 K3-NMG57 K3-NM55 K3-NM57	K3-NR63 K3-NM65 K3-NM67 K3-NM69		K3-NR83 K3-NM85 K3-NM87 K3-NM89		K3-NM05		

†For best results, use with bronze mandrel.

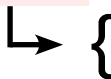
Recommended Stones for K3 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish μm	Approx. R _a Surface Finish μin	Stone to use	Approx. R _a Surface Finish μm	Approx. R _a Surface Finish μin
Deburring: rough holes, all materials						
	K3-A611	—	—	K3-A611	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K3-J67	0,83	33	K3-DM87	1,25	50
Brass, Soft	K3-J65	0,83	33	K3-J65	0,83	33
Bronze	K3-J67	0,83	33	K3-J67	0,83	33
Carbide	K3-DM57	0,50	20	K3-DM57	0,50	20
Cast Iron	K3-J67	0,30	12	K3-DM57	2,00	80
Ceramic	K3-DM57	1,00	40	K3-DM57	1,00	40
Glass	K3-DM57	1,75	70	K3-DM57	1,75	70
Steel, Soft	K3-A67	0,50	20	K3-NM45	1,25	50
Steel, Hardened*	K3-A65	0,30	12	K3-NM45	1,12	45
Steel, Hardened**	K3-A65	0,30	12	—	—	—
Steel, Very	K3-NM65	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	K3-J95	0,30	12	K3-DM07	0,83	33
Brass, Soft	K3-J85	0,40	16	K3-J83	0,40	16
Bronze	K3-J95	0,30	12	K3-J95	0,30	12
Carbide	K3-DM07	0,08	3	K3-DM07	0,08	3
Cast Iron	K3-J95	0,13	5	K3-DM07	0,50	20
Ceramic	K3-DM07	0,38	15	K3-DM07	0,38	15
Glass	K3-DM07	0,38	15	K3-DM07	0,38	15
Steel, Soft	K3-J95	0,10	4	K3-NM05	0,40	16
Steel, Hardened	K3-J85	0,13	5	K3-NM05	0,18	7

* 1st choice

** 2nd choice.
Use if A65 does not cut.

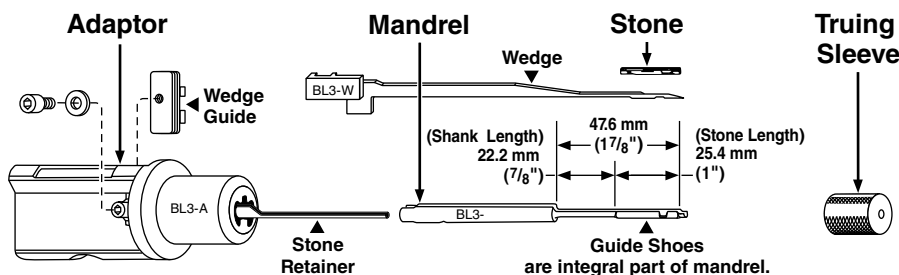
*** 3rd choice.
Use if A63 does not cut.



BL3

Honing Units

Diameter Range:
2,54 mm – 3,05 mm
.100" – .120"



Order 1-5 For Complete BL3 Honing Units

Diameter Range 2,54 mm - 3,05 mm .100" - .120"		1 BL3 Mandrel Includes wedge				2 Truing Sleeve		3 Adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix					With stone retainer and wedge guide		For machines with fully adjustable spindle nose		See All Stone Tables At Right		
2,54-2,59	.100-.102	BL3-100C	S	H	B	S-100	BL3-A		C-100				
2,59-2,64	.102-.104	BL3-102C	S	H	B	S-102	BL3-A		C-102				
2,64-2,69	.104-.106	BL3-104C	S	H	B	S-104	BL3-A		C-104				
2,69-2,74	.106-.108	BL3-106C	S	H	B	S-106	BL3-A		C-106				
2,74-2,79	.108-.110	BL3-108C	S	H	B	S-108	BL3-A		C-108				
2,79-2,84	.110-.112	BL3-110C	S	H	B	S-110	BL3-A		C-110				
2,84-2,90	.112-.114	BL3-112C	S	H	B	S-112	BL3-A		C-112				
2,90-2,95	.114-.116	BL3-114C	S	H	B	S-114	BL3-A		C-114				
2,95-3,00	.116-.118	BL3-116C	S	H	B	S-116	BL3-A		C-116				
3,00-3,05	.118-.120	BL3-118C	S	H	B	S-118	BL3-A		C-118				

Mandrel Options

S = Steel Mandrel w/ soft shoes, for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing, hard, rough, carbide, ceramic and glass.
B = Bronze Mandrel for producing very fine finishes and honing exotic metals.

BL3 Mandrel Replacement Parts

BL3-W Wedge
 Replace when wear *begins* to show.
LN-3025C Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some honing applications. Another advantage of Super Mandrels is faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. Select appropriate soft steel mandrel and add-D.+

Example: BL3-100CS-D.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

BL3

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

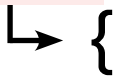
Available Stones											
				Grit Size							
				70	80	100	150	220	280	320	400 500 600 900 1200
Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box										
								L3-A55 L3-A57	L3-A61 L3-A63 L3-A65 L3-A67 L3-A69 L3-A611	L3-A75 L3-A77 L3-A79	
Hard--Soft	Silicon Carbide Stones (J,C) - 12 per box										
								L3-J63 L3-J65 L3-J67	L3-J83 L3-J85 L3-J87 L3-J89	L3-J93 L3-J95 L3-J97 L3-J99	L3-C05†
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box										
				L3-DMB45							L3-DR007
			L3-DM47	L3-DM55 L3-DM57					L3-DM85 L3-DM87	L3-DM05 L3-DM07	
Hard-----Soft				L3-DV57						L3-DV07	
				L3-NR53 L3-NMG57 L3-NM55 L3-NM57	L3-NR63				L3-NR83		
			L3-NM45	L3-NM65 L3-NM67 L3-NM69				L3-NM85 L3-NM87 L3-NM89	L3-NM95	L3-NM05 L3-NM07	

†For best results, use with bronze mandrel.

Recommended Stones for BL3 Mandrels

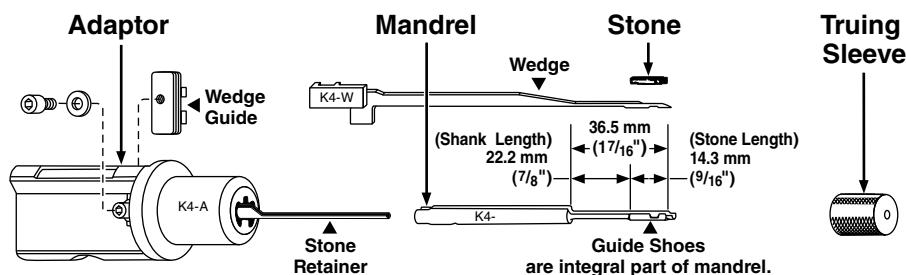
Material	Low-Volume		High-Volume	
	Stone to use	Approx. R _a Surface Finish µm pin	Stone to use	Approx. R _a Surface Finish µm pin
Deburring: rough holes, all materials				
	L3-A611	—	L3-A611	—
Fast removal: deburred, bored, ground, reamed holes				
Aluminum	L3-J67	0,83 33	L3-DM87	1,25 50
Brass, Soft	L3-J65	0,83 33	L3-J65	0,83 33
Bronze	L3-J67	0,83 33	L3-J67	0,83 33
Carbide	L3-DM57	0,50 20	L3-DM57	0,50 20
Cast Iron	L3-J67	0,30 12	L3-DM57	2,00 80
Ceramic	L3-DM57	1,00 40	L3-DM57	1,00 40
Glass	L3-DM57	1,75 70	L3-DM57	1,75 70
Steel, Soft	L3-A67	0,50 20	L3-NM55	1,25 50
Steel, Hardened*	L3-A65	0,30 12	L3-NM55	1,12 45
Steel, Hardened**	L3-A65	0,30 12	—	—
Steel, Very Hard***	L3-NM65	0,70 28	—	—
Fine finishing: previously honed holes				
Aluminum	L3-J95	0,30 12	L3-DM07	0,83 33
Brass, Soft	L3-J85	0,40 16	L3-J85	0,40 16
Bronze	L3-J95	0,30 12	L3-J95	0,30 12
Carbide	L3-DM07	0,08 3	L3-DM07	0,08 3
Cast Iron	L3-J95	0,13 5	L3-DM07	0,50 20
Ceramic	L3-DM07	0,38 15	L3-DM07	0,38 15
Glass	L3-DM07	0,38 15	L3-DM07	0,38 15
Steel, Soft	L3-J95	0,10 4	L3-NM05	0,40 16
Steel, Hardened	L3-J85	0,13 5	L3-NM05	0,18 7

* 1st choice
** 2nd choice.
Use if A65 does not cut.
*** 3rd choice.
Use if A63 does not cut.



K4 Honing Units

Diameter Range:
3,05 mm – 3,81 mm
.120" – .150"



Order 1-5 For Complete K4 Honing Units

Diameter Range 3,05 mm - 3,81 mm .120" - .150"		1 K4 Mandrel Includes wedge				2 Truing Sleeve		3 Adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix					With stone retainer and wedge guide		For machines with fully adjustable spindle nose				
3,05-3,17	.120-.125	K4-120C	S	H	B	S-120	K4-A	C-120	See All Stone Tables At Right				
3,17-3,30	.125-.130	K4-125C	S	H	B	S-125	K4-A	C-125					
3,30-3,43	.130-.135	K4-130C	S	H	B	S-130	K4-A	C-130					
3,43-3,56	.135-.140	K4-135C	S	H	B	S-135	K4-A	C-135					
3,56-3,68	.140-.145	K4-140C	S	H	B	S-140	K4-A	C-140					
3,68-3,81	.145-.150	K4-145C	S	H	B	S-145	K4-A	C-145					

Mandrel Options

S = Steel Mandrel w/ soft shoes, for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for producing very fine finishes and honing exotic metals.

K4 Mandrel Replacement Parts

K4-W Wedge
 Replace when wear *begins* to show.
LN-3025C Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some honing applications. Another advantage of Super Mandrels is faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels are available from stock: **K4-120CSD**, **K4-125CSD**, **K4-135CSD**. Select appropriate soft steel mandrel and add-D.

Example: K4-130CS-D.

Full-Carbide Shoe Mandrels+

Recommended to be used for high-production situations. When ordering, specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

K4

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

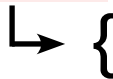
Available Stones													
		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft		Aluminum Oxide Stones (A) - 12 per box											
						K4-A55 K4-A57	K4-A61 K4-A63 K4-A65 K4-A67 K4-A69 K4-A611	K4-A75 K4-A77 K4-A79					
Hard-Soft		Silicon Carbide Stones (J,C) - 12 per box											
							K4-J63 K4-J65 K4-J67 K4-J68	K4-J83 K4-J85 K4-J87 K4-J89	K4-J93 K4-J95 K4-J97 K4-J99	K4-C05†			
Hard-----Soft		Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
					K4-DMB45 K4-DM47	K4-DM55 K4-DM57 K4-DV57 K4-NR53 K4-NMG57 K4-NM45 K4-NM47 K4-NM49	K4-NR63 K4-NM65 K4-NM67 K4-NM69	K4-NR83 K4-NM85 K4-NM87 K4-NM89	K4-DMB95 K4-DM85 K4-DM87 K4-DV87	K4-DM05 K4-DM07 K4-DV07 K4-NM05 K4-NM07 K4-NM09			K4-DR007 K4-NM005

†For best results, use with bronze mandrel.

Recommended Stones for K4 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm µin		Stone to use	Approx. R _a Surface Finish µm µin	
Deburring: rough holes, all materials						
	K4-A611	—	—	K4-A611	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K4-J67	0,83	33	K4-DM87	1,25	50
Brass, Soft	K4-J63	0,83	33	K4-J63	0,83	33
Bronze	K4-J67	0,83	33	K4-J67	0,83	33
Carbide	K4-DM57	0,50	20	K4-DM57	0,50	20
Cast Iron	K4-J67	0,30	12	K4-DM57	2,00	80
Ceramic	K4-DM57	1,00	40	K4-DM57	1,00	40
Glass	K4-DM57	1,75	70	K4-DM57	1,75	70
Steel, Soft	K4-A67	0,75	30	K4-NM45	1,25	50
Steel, Hardened*	K4-A65	0,30	12	K4-NM45	1,12	45
Steel, Hardened**	K4-A63	0,30	12	—	—	—
Steel, Very Hard***	K4-NM65	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	K4-J95	0,30	12	K4-DM07	0,83	33
Brass, Soft	K4-J95	0,40	16	K4-J83	0,40	16
Bronze	K4-J95	0,30	12	K4-J95	0,30	12
Carbide	K4-DM07	0,08	3	K4-DM07	0,08	3
Cast Iron	K4-J95	0,13	5	K4-DM07	0,50	20
Ceramic	K4-DM07	0,38	15	K4-DM07	0,38	15
Glass	K4-DM07	0,38	15	K4-DM07	0,38	15
Steel, Soft	K4-J95	0,10	4	K4-NM05	0,40	16
Steel, Hardened	K4-J83	0,13	5	K4-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A65 does not cut.
*** 3rd choice. Use if A63 does not cut.



Automatic Size Control Probes

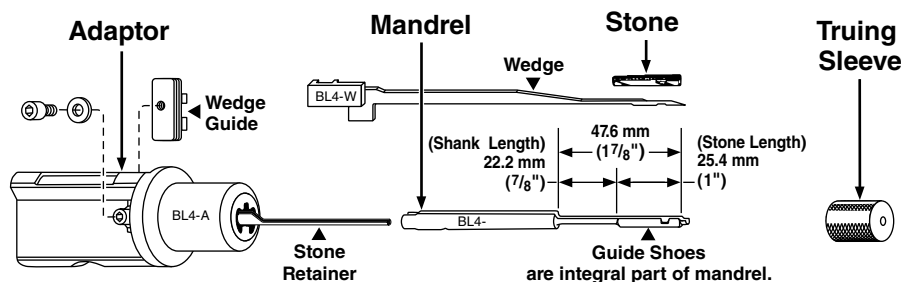
3,05mm - 3,91mm (.120"-.154")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0125	3,18	1/8	3,05	.120	3,53	.139
ASC-0141	3,57	9/64	3,42	.135	3,91	.154

BL4 Honing Units

Diameter Range:
3,05 mm – 3,81 mm
.120" – .150"



Order 1-5 For Complete BL4 Honing Units

Diameter Range 3,05 mm - 3,81 mm .120" - .150"		1 BL4 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	With Standard Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
3,05-3,17	.120-.125	BL4-120C	S H B	S-120	BL4-A	C-120
3,17-3,30	.125-.130	BL4-125C	S H B	S-125	BL4-A	C-125
3,30-3,43	.130-.135	BL4-130C	S H B	S-130	BL4-A	C-130
3,43-3,56	.135-.140	BL4-135C	S H B	S-135	BL4-A	C-135
3,56-3,68	.140-.145	BL4-140C	S H B	S-140	BL4-A	C-140
3,68-3,81	.145-.150	BL4-145C	S H B	S-145	BL4-A	C-145
						See All Stone Tables At Right

Mandrel Options

S = Steel Mandrel w/ soft shoes, for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for producing very fine finishes and honing exotic metals.

BL4 Mandrel Replacement Parts

BL4-W Wedge
Replace when wear *begins* to show.
LN-3025C Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some honing applications. Another advantage of Super Mandrels is faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. Select appropriate soft steel mandrel and add -D.+

Example: BL4-120CS-D.+

Full-Carbide Shoe Mandrels+

Recommended to be used for high-production situations. When ordering, specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

BL4

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box											
						L4-A55 L4-A57	L4-A61 L4-A63 L4-A65 L4-A67 L4-A69 L4-A611	L4-A75 L4-A77 L4-A79					
Hard	Soft	Silicon Carbide Stones (J,C) - 12 per box											
							L4-J63 L4-J65 L4-J67 L4-J68		L4-J83 L4-J85 L4-J87 L4-J89	L4-J93 L4-J95 L4-J97 L4-J99	L4-C05†		
Hard	Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
					L4-DMB45 L4-DM47	L4-DM55 L4-DM57 L4-DV57			L4-DM85 L4-DM87		L4-DM05 L4-DM07 L4-DV07		L4-DR007
Hard	Soft				L4-NM45 L4-NM47	L4-NR53 L4-NMG57 L4-NM55 L4-NM57	L4-NR63 L4-NM65 L4-NM67 L4-NM69		L4-NR83 L4-NM85 L4-NM87 L4-NM89		L4-NM05		

†For best results, use with bronze mandrel.

Recommended Stones for BL4 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm µin		Stone to use	Approx. R _a Surface Finish µm µin	
Deburring: rough holes, all materials						
	L4-A611	—	—	L4-A611	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L4-J67	0,83	33	L4-DM87	1,25	50
Brass, Soft	L4-J65	0,83	33	L4-J65	0,83	33
Bronze	L4-J67	0,83	33	L4-J67	0,83	33
Carbide	L4-DM57	0,50	20	L4-DM57	0,50	20
Cast Iron	L4-J67	0,30	12	L4-DM57	2,00	80
Ceramic	L4-DM57	1,00	40	L4-DM57	1,00	40
Glass	L4-DM57	1,75	70	L4-DM57	1,75	70
Steel, Soft	L4-A67	0,75	30	L4-NM45	1,25	50
Steel, Hardened*	L4-A65	0,30	12	L4-NM45	1,12	45
Steel, Hardened**	L4-A65	0,30	12	—	—	—
Steel, Very Hard***	L4-NM65	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	L4-J95	0,30	12	L4-DM07	0,83	33
Brass, Soft	L4-J95	0,40	16	L4-J85	0,40	16
Bronze	L4-J95	0,30	12	L4-J95	0,30	12
Carbide	L4-DM07	0,08	3	L4-DM07	0,08	3
Cast Iron	L4-J95	0,13	5	L4-DM07	0,50	20
Ceramic	L4-DM07	0,38	15	L4-DM07	0,38	15
Glass	L4-DM07	0,38	15	L4-DM07	0,38	15
Steel, Soft	L4-J95	0,10	4	L4-NM05	0,40	16
Steel, Hardened	L4-J85	0,13	5	L4-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A65 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

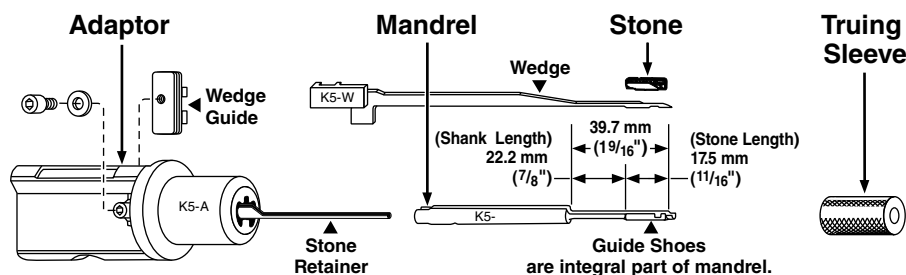
3,05mm - 3,91mm (.120"-.154")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0125	3,18	1/8	3,05	.120	3,53	.139
ASC-0141	3,57	9/64	3,42	.135	3,91	.154

K5 Honing Units

Diameter Range:
3,81 mm – 4,70 mm
.150" – .185"



Order 1-5 For Complete K5 Honing Units

Diameter Range 3,81 mm - 4,70 mm .150" - .185"		1 K5 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	With Standard Shank Choose One Suffix			With stone retainer and wedge guide	For machines with fully adjustable spindle nose
3,81-3,94	.150-.155	K5-150C	S H B	S-150	K5-A	C-150
3,94-4,06	.155-.160	K5-155C	S H B	S-155	K5-A	C-155
4,06-4,19	.160-.165	K5-160C	S H B	S-160	K5-A	C-160
4,19-4,32	.165-.170	K5-165C	S H B	S-165	K5-A	C-165
4,32-4,44	.170-.175	K5-170C	S H B	S-170	K5-A	C-170
4,44-4,57	.175-.180	K5-175C	S H B	S-175	K5-A	C-175
4,57-4,70	.180-.185	K5-180C	S H B	S-180	K5-A	C-180

See All
Stone Tables
At Right

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.

K5 Mandrel Replacement Parts

K5-W Wedge
Replace when wear *begins* to show.
LN-3025C Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some honing applications. Another advantage of Super Mandrels is faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels are available from stock: **K5-155CSD**. Select appropriate soft steel mandrel and add -D.+

Example: K5-150CS-D.+

Full-Carbide Shoe Mandrels+

Recommended to be used for high-production situations. When ordering, specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

K5

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones from Stock

	Grit Size											
	70	80	100	150	220	280	320	400	500	600	900	1200
Soft-----Hard	Aluminum Oxide Stones (A) - 12 per box											
					K5-A55 K5-A57	K5-A61 K5-A63 K5-A65 K5-A67 K5-A69 K5-A611	K5-A75 K5-A77 K5-A79					
Soft-----Hard	Silicon Carbide Stones (J,C) - 12 per box											
					K5-J57	K5-J63 K5-J65 K5-J67 K5-J69	K5-J83 K5-J85 K5-J87 K5-J89	K5-J93 K5-J95 K5-J97 K5-J99		K5-C05†		
Soft-----Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
				K5-DMB45 K5-DM47	K5-DM55 K5-DM57 K5-DV57			K5-DM85 K5-DM87 K5-DV87		K5-DM05 K5-DM07 K5-DV07		K5-DR007
			K5-NM35	K5-NM45 K5-NM49	K5-NR53 K5-NMG57 K5-NM55 K5-NM57 K5-NM59	K5-NR63 K5-NM65 K5-NM67 K5-NM69		K5-NR83 K5-NM85 K5-NM87 K5-NM89	K5-NM95	K5-NM05 K5-NM07	K5-NM905	K5-NM005

†For best results, use with bronze mandrel.

Recommended Stones for K5 Mandrels

Material	Low-Volume		High-Volume	
	Stone to use	Approx. R _a Surface Finish µm µin	Stone to use	Approx. R _a Surface Finish µm µin
Deburring: rough holes, all materials				
	K5-A611	—	K5-A611	—
Fast removal: deburred, bored, ground, reamed holes				
Aluminum	K5-J67	0,83 33	K5-DM87	1,25 50
Brass, Soft	K5-J63	0,83 33	K5-J63	0,83 33
Bronze	K5-J67	0,83 33	K5-J67	0,83 33
Carbide	K5-DM57	0,50 20	K5-DM57	0,50 20
Cast Iron	K5-J67	0,30 12	K5-DM57	2,00 80
Ceramic	K5-DM57	1,00 40	K5-DM57	1,00 40
Glass	K5-DM57	1,75 70	K5-DM57	1,75 70
Steel, Soft	K5-A67	0,75 30	K5-NM45	1,25 50
Steel, Hardened*	K5-A65	0,30 12	K5-NM45	1,12 45
Steel, Hardened**	K5-A63	0,30 12	—	—
Steel, Very Hard***	K5-NM65	0,70 28	—	—
Fine finishing: previously honed holes				
Aluminum	K5-J95	0,30 12	K5-DM07	0,83 33
Brass, Soft	K5-J95	0,40 16	K5-J83	0,40 16
Bronze	K5-J95	0,30 12	K5-J95	0,30 12
Carbide	K5-DM07	0,08 3	K5-DM07	0,08 3
Cast Iron	K5-J95	0,13 5	K5-DM07	0,50 20
Ceramic	K5-DM07	0,38 15	K5-DM07	0,38 15
Glass	K5-DM07	0,38 15	K5-DM07	0,38 15
Steel, Soft	K5-J95	0,10 4	K5-NM05	0,40 16
Steel, Hardened	K5-J83	0,13 5	K5-NM05	0,18 7

* 1st choice
** 2nd choice. Use if A65 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

3,81mm - 4,70mm (.150"-.185")

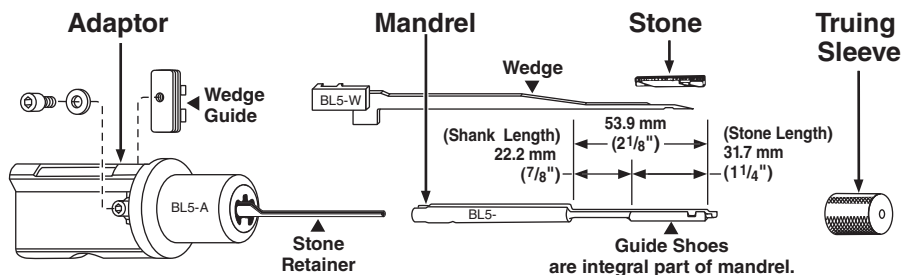
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0156	4	5/32	3,81	.150	4,29	.169
ASC-0172	4,36	11/64	4,22	.166	4,70	.185

BL5

Honing Units

Diameter Range:
3,81 mm – 4,70 mm
.150" – .185"



Order 1-5 For Complete BL5 Honing Units

Diameter Range 3,81 mm - 4,70 mm .150" - .185"		1 BL5 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
		With Standard Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
3,81-3,94	.150-.155	BL5-150C	S H B	S-150	BL5-A	C-150
3,94-4,06	.155-.160	BL5-155C	S H B	S-155	BL5-A	C-155
4,06-4,19	.160-.165	BL5-160C	S H B	S-160	BL5-A	C-160
4,19-4,32	.165-.170	BL5-165C	S H B	S-165	BL5-A	C-165
4,32-4,44	.170-.175	BL5-170C	S H B	S-170	BL5-A	C-170
4,44-4,57	.175-.180	BL5-175C	S H B	S-175	BL5-A	C-175
4,57-4,70	.180-.185	BL5-180C	S H B	S-180	BL5-A	C-180
						See All Stone Tables At Right

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.

BL5 Mandrel Replacement Parts

BL5-W Wedge
Replace when wear *begins* to show.
LN-3025C Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some honing applications. Another advantage of Super Mandrels is faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. Select appropriate soft steel mandrel and add -D.+

Example: BL5-150CS-D.+

Full-Carbide Shoe Mandrels+

Recommended to be used for high-production situations. When ordering, specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

BL5

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

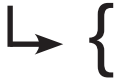
Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box											
						L5-A55 L5-A57	L5-A61 L5-A63 L5-A65 L5-A67 L5-A69 L5-A611	L5-A75 L5-A77 L5-A79					
Soft	Hard	Silicon Carbide Stones (J,C) - 12 per box											
							L5-J63 L5-J65 L5-J67 L5-J69		L5-J83 L5-J85 L5-J87 L5-J89	L5-J93 L5-J95 L5-J97 L5-J99	L5-C05†		
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vittrified (V) Bond - 1 per box											
					L5-DMB45 L5-DM47	L5-DMB55 L5-DM55 L5-DM57 L5-DV57 L5-NR53 L5-NMG57 L5-NM45 L5-NM49	L5-DMB65 L5-NR61 L5-NR63 L5-NM65 L5-NM67 L5-NM69		L5-DM85 L5-DM87 L5-DV87 L5-NR83 L5-NM85 L5-NM87 L5-NM89		L5-DM05 L5-DM07 L5-DV07 L5-NM05		L5-DR007 L5-DM007 L5-NM005 L5-NM007

†For best results, use with bronze mandrel.

Recommended Stones for BL5 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	L5-A611	—	—	L5-A611	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L5-J67	0,83	33	L5-DM87	1,25	50
Brass, Soft	L5-J63	0,83	33	L5-J63	0,83	33
Bronze	L5-J67	0,83	33	L5-J67	0,83	33
Carbide	L5-DM57	0,50	20	L5-DM57	0,50	20
Cast Iron	L5-J67	0,30	12	L5-DM57	2,00	80
Ceramic	L5-DM57	1,00	40	L5-DM57	1,00	40
Glass	L5-DM57	1,75	70	L5-DM57	1,75	70
Steel, Soft	L5A67	0,75	30	L5-NM45	1,25	50
Steel, Hardened*	L5-A65	0,30	12	L5-NM45	1,12	45
Steel, Hardened**	L5-A63	0,30	12	—	—	—
Steel, Very Hard***	L5-NM65	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	L5-J95	0,30	12	L5-DM07	0,83	33
Brass, Soft	L5-J95	0,40	16	L5-J83	0,40	16
Bronze	L5-J95	0,30	12	L5-J95	0,30	12
Carbide	L5-DM07	0,08	3	L5-DM07	0,08	3
Cast Iron	L5-J95	0,13	5	L5-DM07	0,50	20
Ceramic	L5-DM07	0,38	15	L5-DM07	0,38	15
Glass	L5-DM07	0,38	15	L5-DM07	0,38	15
Steel, Soft	L5-J95	0,10	4	L5-NM05	0,40	16
Steel, Hardened	L5-J83	0,13	5	L5-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A65 does not cut.
*** 3rd choice. Use if A63 does not cut.



Automatic Size Control Probes

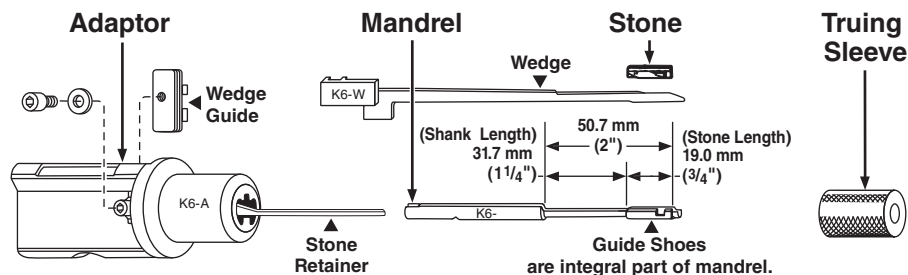
3,81mm - 4,70mm (.150"-.185")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0156	4	5/32	3,81	.150	4,29	.169
ASC-0172	4,36	11/64	4,22	.166	4,70	.185

K6 Honing Units

Diameter Range:
4,70 mm – 6,22 mm
.185" – .245"



Order 1-5 For Complete K6 or J-K6 Honing Units

Diameter Range 4,70 mm - 6,22 mm .185" - .245"		1 K6 Mandrel Includes wedge	1 J-K6 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter For J-K6 mandrel order J-K6-A adapter	4 Alignment Bushing	5 Honing Stone
		With Standard Shank Choose One Suffix	Steel Mandrel With Extra-Long Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
4,70-4,83	.185-.190	K6-185C S H B	J-K6-185C S H	S-185	K6-A	C-187	See All Stone Tables At Right
4,83-4,95	.190-.195	K6-190C S H B	J-K6-190C S H	S-190	K6-A	C-190	
4,95-5,08	.195-.200	K6-195C S H B	J-K6-195C S H	S-195	K6-A	C-195	
5,08-5,21	.200-.205	K6-200C S H B	J-K6-200C S H	S-200	K6-A	C-200	
5,21-5,33	.205-.210	K6-205C S H B	J-K6-205C S H	S-205	K6-A	C-205	
5,33-5,46	.210-.215	K6-210C S H B	J-K6-210C S H	S-210	K6-A	C-210	
5,46-5,59	.215-.220	K6-215C S H B	J-K6-215C S H	S-215	K6-A	C-215	
5,59-5,71	.220-.225	K6-220C S H B	J-K6-220C S H	S-220	K6-A	C-220	
5,71-5,84	.225-.230	K6-225C S H B	J-K6-225C S H	S-225	K6-A	C-225	
5,84-5,97	.230-.235	K6-230C S H B	J-K6-230C S H	S-230	K6-A	C-230	
5,97-6,10	.235-.240	K6-235C S H B	J-K6-235C S H	S-235	K6-A	C-235	
6,10-6,22	.240-.245	K6-240C S H B	J-K6-240C S H	S-240	K6-A	C-240	

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.
NOTE: J-K6 Mandrels not available in bronze.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in KR6+ only.

K6 Mandrel Replacement Parts

K6-W Wedge
Replace when wear *begins* to show.
LN-3087C Stone Retainer
LN-3211A Wedge Guide

Replacement Parts for J-K6 Mandrels

J-K6-W Wedge
Replace when wear *begins* to show.
LN-3590A Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels are available from stock:
K6-185CSD, K6-195CSD and K6-205CSD.
Select appropriate soft steel mandrel and add -D.+

Example: K6-185CS-D.+

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

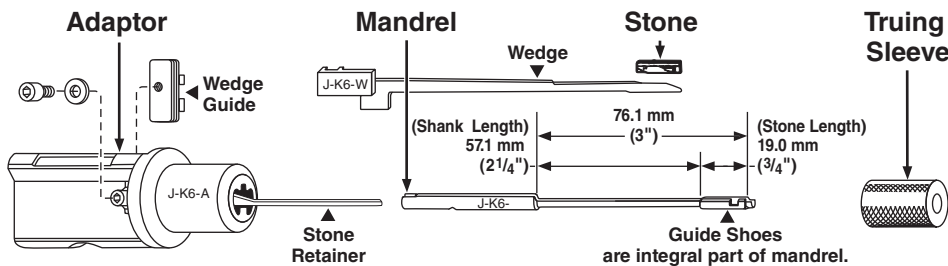
Tandem "In-Line" Mandrels+

Used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

J-K6 Honing Units

Extra-Long
Shank



J-K6 Mandrels are similar to the K6 Mandrels except the shanks are 25.4 mm (1") longer and should be used only when counterbores will not allow holes to be honed properly with standard K6 Mandrels.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box											
					K6-A43		K6-A61						
					K6-A45	K6-A55	K6-A63						
					K6-A47	K6-A57	K6-A65	K6-A75					
					K6-A49	K6-A59	K6-A67	K6-A77					
							K6-A69	K6-A79					
					K6-A413								
					K6-A415								
Soft	Hard	Silicon Carbide Stones (J,C) - 12 per box											
					K6-J45	K6-J55	K6-J63		K6-J83	K6-J93			
					K6-J47	K6-J57	K6-J65		K6-J85	K6-J95			
					K6-J49		K6-J67		K6-J87	K6-J97	K6-C05†		
							K6-J69		K6-J89	K6-J99			
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vittrified (V) Bond - 1 per box											
					K6-DMB45								K6-DR007
					K6-DM45	K6-DM55			K6-DM85		K6-DM05		
					K6-DM47	K6-DM57			K6-DM87		K6-DM07		
						K6-DV57			K6-DV87		K6-DV07		
							K6-NR61						
							K6-NR63						
					K6-NM35	K6-NR53			K6-NR83				
					K6-NM45	K6-NMG57			K6-NM85	K6-NM95	K6-NM05	K6-NM905	K6-NM005
					K6-NM47	K6-NM55			K6-NM87	K6-NM97	K6-NM07		
					K6-NM49	K6-NM57			K6-NM89				
						K6-NM59	K6-NM65						
							K6-NM67						
							K6-NM69						

†For best results, use with bronze mandrel.

Recommended Stones for K6 and J-K6 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish μ m	pin	Stone to use	Approx. R _a Surface Finish μ m	pin
Deburring: rough holes, all materials						
	K6-A413	—	—	K6-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K6-J57	1,38	55	K6-DM87	1,25	50
Brass, Soft	K6-J63	0,83	33	K6-J63	0,83	33
Bronze	K6-J57	1,38	55	K6-J57	1,38	55
Carbide	K6-DM57	0,50	20	K6-DM57	0,50	20
Cast Iron	K6-J57	0,50	20	K6-DM57	2,00	80
Ceramic	K6-DM57	1,00	40	K6-DM57	1,00	40
Glass	K6-DM57	1,75	70	K6-DM57	1,75	70
Steel, Soft	K6-A57	0,75	30	K6-NM45	1,25	50
Steel, Hardened*	K6-A55	0,30	12	K6-NM45	1,12	45
Steel, Hardened***	K6-A63	0,30	12	—	—	—
Steel, Very Hard***	K6-NM65	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	K6-J95	0,30	12	K6-DM07	0,83	33
Brass, Soft	K6-J83	0,40	16	K6-J83	0,40	16
Bronze	K6-J95	0,30	12	K6-J95	0,30	12
Carbide	K6-DM07	0,08	3	K6-DM07	0,08	3
Cast Iron	K6-J95	0,13	5	K6-DM07	0,50	20
Ceramic	K6-DM07	0,38	15	K6-DM07	0,38	15
Glass	K6-DM07	0,38	15	K6-DM07	0,38	15
Steel, Soft	K6-J95	0,10	4	K6-NM05	0,40	16
Steel, Hardened	K6-J83	0,13	5	K6-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

4,57mm - 6,22mm (.180"-.245")

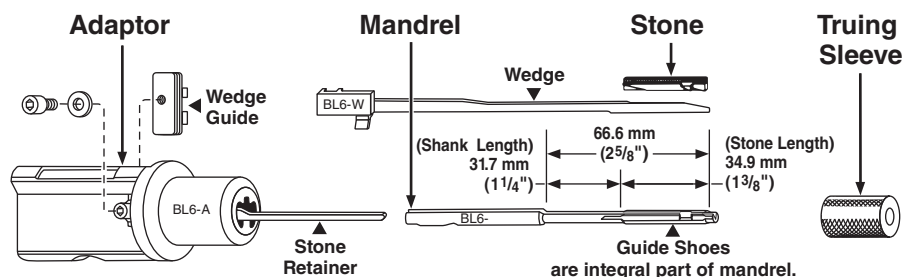
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0188	4,76	3/16	4,57	.180	5,05	.199
ASC-0203	5	13/64	4,85	.191	5,33	.210
ASC-0219	5,56	7/32	5,36	.211	5,84	.230
ASC-0234	6	15/64	5,74	.226	6,22	.245

BL6

Honing Units

Diameter Range:
4,70 mm – 6,22 mm
.185" – .245"



Order 1-5 For Complete BL6 or L6 Honing Units

Diameter Range 4,70 mm - 6,22 mm .185" - .245"		1 BL6 Mandrel Includes wedge	1 L6 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter For L6 mandrels order L6-A adapter	4 Alignment Bushing	5 Honing Stone
		With Standard Shank Choose One Suffix	With Extra-Long Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
4,70-4,83	.185-.190	BL6-185C S H B	L6-185C S H B	S-185	BL6-A	C-187	See All Stone Tables At Right
4,83-4,95	.190-.195	BL6-190C S H B	L6-190C S H B	S-190	BL6-A	C-190	
4,95-5,08	.195-.200	BL6-195C S H B	L6-195C S H B	S-195	BL6-A	C-195	
5,08-5,21	.200-.205	BL6-200C S H B	L6-200C S H B	S-200	BL6-A	C-200	
5,21-5,33	.205-.210	BL6-205C S H B	L6-205C S H B	S-205	BL6-A	C-205	
5,33-5,46	.210-.215	BL6-210C S H B	L6-210C S H B	S-210	BL6-A	C-210	
5,46-5,59	.215-.220	BL6-215C S H B	L6-215C S H B	S-215	BL6-A	C-215	
5,59-5,71	.220-.225	BL6-220C S H B	L6-220C S H B	S-220	BL6-A	C-220	
5,71-5,84	.225-.230	BL6-225C S H B	L6-225C S H B	S-225	BL6-A	C-225	
5,84-5,97	.230-.235	BL6-230C S H B	L6-230C S H B	S-230	BL6-A	C-230	
5,97-6,10	.235-.240	BL6-235C S H B	L6-235C S H B	S-235	BL6-A	C-235	
6,10-6,22	.240-.245	BL6-240C S H B	L6-240C S H B	S-240	BL6-A	C-240	

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in BLR6+ only.

BL6 Mandrel Replacement Parts

BL6-W Wedge
Replace when wear **begins** to show.
LN-3087C Stone Retainer
LN-3211A Wedge Guide

L6 Mandrel Replacement Parts

L6-W Wedge
Replace when wear **begins** to show.
LN-3590A Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. Available in both BL6 and L6 Mandrels. Select appropriate soft steel mandrel and add -D.+

Example: BL6-185CS-D.+

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

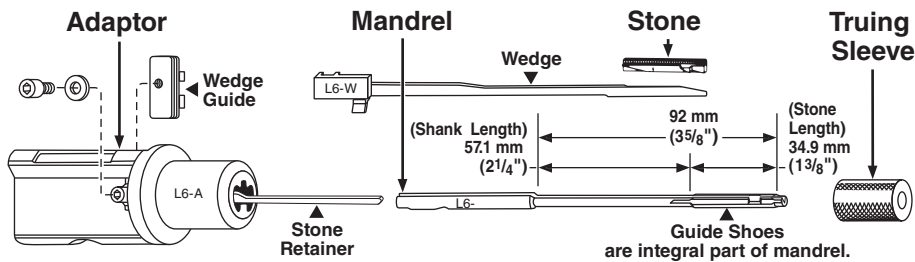
Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service



L6 Mandrels are like BL6 Mandrels except the shanks are 25.4 mm (1") longer.
Use only when BL6 is too short

L6 Honing Units

Extra-Long
Shank

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box				L6-A43 L6-A45 L6-A47 L6-A49 L6-A413	L6-A55 L6-A57 L6-A59	L6-A61 L6-A63 L6-A65 L6-A67 L6-A69	L6-A75 L6-A77 L6-A79					
	Silicon Carbide Stones (J,C) - 12 per box				L6-J45 L6-J47 L6-J49	L6-J55 L6-J57 L6-J59	L6-J63 L6-J65 L6-J67 L6-J69	L6-J83 L6-J85 L6-J87 L6-J89	L6-J93 L6-J95 L6-J97 L6-J99	L6-C05†			
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitriified (V) Bond - 1 per box				L6-DM35	L6-DM45 L6-DM47	L6-DM55 L6-DM57	L6-DV57	L6-NR61 L6-NR63	L6-DM85 L6-DM87	L6-DM05 L6-DM07		L6-DR007 L6-DM005
					L6-NM35	L6-NM45 L6-NM47 L6-NM49	L6-NM55 L6-NM57 L6-NM59	L6-NM65 L6-NM67 L6-NM69	L6-NR83	L6-NM85 L6-NM87 L6-NM89	L6-NM95 L6-NM97	L6-NM05 L6-NM07	L6-NM905 L6-NM005

†For best results, use with bronze mandrel.

Recommended Stones for BL6 and L6 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	L6-A413	—	—	L6-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L6-J57	1,38	55	L6-DM87	1,25	50
Brass, Soft	L6-J63	0,83	33	L6-J63	0,83	33
Bronze	L6-J57	1,38	55	L6-J57	1,38	55
Carbide	L6-DM57	0,50	20	L6-DM57	0,50	20
Cast Iron	L6-J57	0,50	20	L6-DM57	2,00	80
Ceramic	L6-DM57	1,00	40	L6-DM57	1,00	40
Glass	L6-DM57	1,75	70	L6-DM57	1,75	70
Steel, Soft	L6-A57	0,75	30	L6-NM45	1,25	50
Steel, Hardened*	L6-A55	0,30	12	L6-NM45	1,12	45
Steel, Hardened**	L6-A63	0,30	12	—	—	—
Steel, Very Hard***	L6-NM65	0,70	28	—	—	—
Fine finishing: previously honed holes						
Aluminum	L6-J95	0,30	12	L6-DM07	0,83	33
Brass, Soft	L6-J83	0,40	16	L6-J83	0,40	16
Bronze	L6-J95	0,30	12	L6-J95	0,30	12
Carbide	L6-DM07	0,08	3	L6-DM07	0,08	3
Cast Iron	L6-J95	0,13	5	L6-DM07	0,50	20
Ceramic	L6-DM07	0,38	15	L6-DM07	0,38	15
Glass	L6-DM07	0,38	15	L6-DM07	0,38	15
Steel, Soft	L6-J95	0,10	4	L6-NM05	0,40	16
Steel, Hardened	L6-J83	0,13	5	L6-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

4,57mm - 6,22mm (.180"-.245")

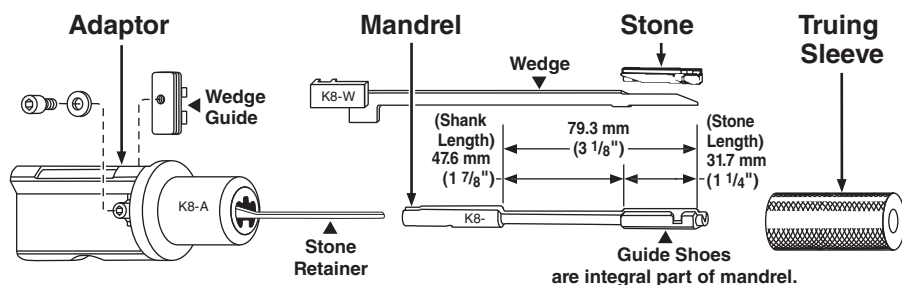
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter mm in	Diameter Range			
		Low mm in	High mm in	Low mm in	High mm in
ASC-0188	4,76 3/16	4,57 .180	5,05 .199		
ASC-0203	5 13/64	4,85 .191	5,33 .210		
ASC-0219	5,56 7/32	5,36 .211	5,84 .230		
ASC-0234	6 15/64	5,74 .226	6,22 .245		

K8

Honing Units

Diameter Range:
6,22 mm – 7,82 mm
.245" – .308"



Order 1-5 For Complete K8 or J-K8 Honing Units

Diameter Range 6,22 mm - 7,82 mm .245" - .308"		1 K8 Mandrel Includes wedge				1 J-K8 Mandrel Includes wedge		2 Truing Sleeve		3 Adapter For J-K8 mandrels order J-K8-A adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank				With Extra-Long Shank					With stone retainer and wedge guide		For machines with fully adjustable spindle nose		See All Stone Tables At Right
		Choose One Suffix				Choose One Suffix									
6,22-6,35	.245-.250	K8-245A	S	H	B	J-K8-245A	S	H	S-245	K8-A		C-245			
6,35-6,48	.250-.255	K8-250A	S	H	B	J-K8-250A	S	H	S-250	K8-A		C-250			
6,48-6,60	.255-.260	K8-255A	S	H	B	J-K8-255A	S	H	S-255	K8-A		C-255			
6,60-6,73	.260-.265	K8-260A	S	H	B	J-K8-260A	S	H	S-260	K8-A		C-260			
6,73-6,86	.265-.270	K8-265A	S	H	B	J-K8-265A	S	H	S-265	K8-A		C-265			
6,86-6,98	.270-.275	K8-270A	S	H	B	J-K8-270A	S	H	S-270	K8-A		C-270			
6,98-7,11	.275-.280	K8-275A	S	H	B	J-K8-275A	S	H	S-275	K8-A		C-275			
7,11-7,24	.280-.285	K8-280A	S	H	B	J-K8-280A	S	H	S-280	K8-A		C-280			
7,24-7,37	.285-.290	K8-285A	S	H	B	J-K8-285A	S	H	S-285	K8-A		C-285			
7,37-7,49	.290-.295	K8-290A	S	H	B	J-K8-290A	S	H	S-290	K8-A		C-290			
7,49-7,62	.295-.300	K8-295A	S	H	B	J-K8-295A	S	H	S-295	K8-A		C-295			
7,62-7,82	.300-.308	K8-300A	S	H	B	J-K8-300A	S	H	S-300	K8-A		C-300			

See All
Stone
Tables
At Right

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrels for very fine finishes and honing exotic metals.
NOTE: J-K8 Mandrels not available in bronze.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in KR8+ only.

K8 Mandrel Replacement Parts

K8-W Wedge
Replace when wear **begins** to show
LN-3117A Stone Retainer
LN-3211A Wedge Guide

J-K8 Mandrel Replacement Parts

J-K8-W Wedge
Replace when wear **begins** to show
LN-3608A Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications... plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels are available from stock: **K8-245ASD**, **K8-250ASD** and **K8-260ASD**. Select appropriate soft steel mandrel and add -D.

Example: K8-265AS-D.

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

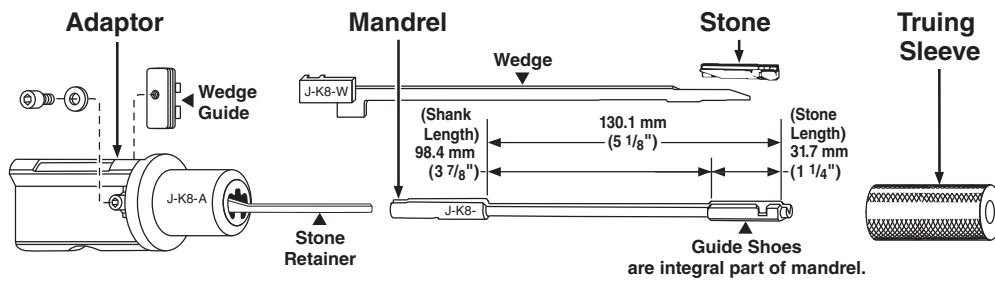
Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

+ Special Order - Contact Customer Service

J-K8 Honing Units

Extra-Long
Shank



J-K8 Mandrels are similar to the K8 Mandrels except the shanks are 50.8 mm (2") longer and should be used only when counterbores will not allow holes to be honed properly with standard K8 Mandrels.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones

		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box											
					K8-A43	K8-A53	K8-A61						
Soft	Hard	Silicon Carbide Stones (J,C) - 12 per box											
					K8-J45	K8-J55	K8-J63		K8-J83	K8-J93			
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
					K8-DM35	K8-DMB45	K8-DMB55		K8-DM85		K8-DM05		K8-DR007
Soft	Hard				K8-DM45	K8-DM55	K8-DM57		K8-DM87		K8-DM07		K8-DM005
					K8-DM47	K8-DM59	K8-DV57		K8-DV87		K8-DV07		
Soft	Hard					K8-NR51	K8-NR53						
						K8-NMG57	K8-NR63		K8-NR83				
Soft	Hard				K8-NM35	K8-NM45	K8-NM55		K8-NM85	K8-NM95	K8-NM05	K8-NM905	K8-NM005
					K8-NM39	K8-NM47	K8-NM57		K8-NM87		K8-NM07		
Soft	Hard					K8-NM49	K8-NM59		K8-NM89				
							K8-NM65						
Soft	Hard						K8-NM67						
							K8-NM69						

†For best results, use with bronze mandrel.

Recommended Stones for K8 and J-K8 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _A Surface Finish µm µin		Stone to use	Approx. R _A Surface Finish µm µin	
Deburring: rough holes, all materials						
	K8-A413	—	—	K8-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K8-J57	1,38	55	K8-DM85	1,25	50
Brass, Soft	K8-J63	0,83	33	K8-J63	0,83	33
Bronze	K8-J57	1,38	55	K8-J57	1,38	55
Carbide	K8-DM55	0,50	20	K8-DM55	0,50	20
Cast Iron	K8-J57	0,50	20	K8-DM55	2,00	80
Ceramic	K8-DM55	1,00	40	K8-DM55	1,00	40
Glass	K8-DM55	1,75	70	K8-DM55	1,75	70
Steel, Soft	K8-A57	0,75	30	K8-NM55	1,25	50
Steel, Hardened*	K8-A55	0,30	12	K8-NM55	1,00	40
Steel, Hardened**	K8-A63	0,30	12	—	—	—
Steel, Very Hard***	K8-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	K8-J95	0,30	12	K8-DM05	0,83	33
Brass, Soft	K8-J83	0,40	16	K8-J83	0,40	16
Bronze	K8-J95	0,30	12	K8-J95	0,30	12
Carbide	K8-DM05	0,08	3	K8-DM05	0,08	3
Cast Iron	K8-J95	0,13	5	K8-DM05	0,50	20
Ceramic	K8-DM05	0,38	15	K8-DM05	0,38	15
Glass	K8-DM05	0,38	15	K8-DM05	0,38	15
Steel, Soft	K8-J95	0,10	4	K8-NM05	0,40	16
Steel, Hardened	K8-J83	0,13	5	K8-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

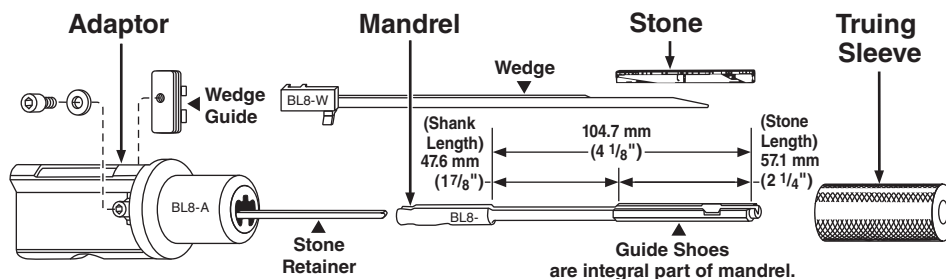
6,10mm - 8,20mm (.240"-.323")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0250	6,35	1/4	6,10	.240	6,58	.259
ASC-0266	6,75	17/64	6,50	.256	6,99	.275
ASC-0281	7	9/32	6,83	.269	7,32	.288
ASC-0297	7,54	19/64	7,29	.287	7,77	.306
ASC-0312	8	5/16	7,72	.304	8,20	.323

BL8 Honing Units

Diameter Range:
6,22 mm – 7,82 mm
.245" – .308"



Order 1-5 For Complete BL8 or L8 Honing Units

Diameter Range 6,22 mm - 7,82 mm .245" - .308"		1 BL8 Mandrel Includes wedge					1 L8 Mandrel Includes wedge					2 Truing Sleeve		3 Adapter For L8 mandrels order L8-A adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix					With Extra-Long Shank Choose One Suffix						With stone retainer and wedge guide		For machines with fully adjustable spindle nose				
6,22-6,35	.245-.250	BL8-245A	S	H	B	L8-245A	S	H	B	S-245	BL8-A		C-245		See All Stone Tables At Right				
6,35-6,48	.250-.255	BL8-250A	S	H	B	L8-250A	S	H	B	S-250	BL8-A		C-250						
6,48-6,60	.255-.260	BL8-255A	S	H	B	L8-255A	S	H	B	S-255	BL8-A		C-255						
6,60-6,73	.260-.265	BL8-260A	S	H	B	L8-260A	S	H	B	S-260	BL8-A		C-260						
6,73-6,86	.265-.270	BL8-265A	S	H	B	L8-265A	S	H	B	S-265	BL8-A		C-265						
6,86-6,98	.270-.275	BL8-270A	S	H	B	L8-270A	S	H	B	S-270	BL8-A		C-270						
6,98-7,11	.275-.280	BL8-275A	S	H	B	L8-275A	S	H	B	S-275	BL8-A		C-275						
7,11-7,24	.280-.285	BL8-280A	S	H	B	L8-280A	S	H	B	S-280	BL8-A		C-280						
7,24-7,37	.285-.290	BL8-285A	S	H	B	L8-285A	S	H	B	S-285	BL8-A		C-285						
7,37-7,49	.290-.295	BL8-290A	S	H	B	L8-290A	S	H	B	S-290	BL8-A		C-290						
7,49-7,62	.295-.300	BL8-295A	S	H	B	L8-295A	S	H	B	S-295	BL8-A		C-295						
7,62-7,82	.300-.308	BL8-300A	S	H	B	L8-300A	S	H	B	S-300	BL8-A		C-300						

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrels for very fine finishes and honing exotic metals.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in BLR8+ only.

BL8 Mandrel Replacement Parts

BL8-W Wedge
 Replace when wear **begins** to show
LN-3117A Stone Retainer
LN-3211A Wedge Guide

L8 Mandrel Replacement Parts

L8-W Wedge
 Replace when wear **begins** to show
LN-3608A Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrel is available from stock: **BL8-245AS-D**. Select appropriate soft steel mandrel and add -D.+

Example: BL8-245AS-D.+

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either Borazon/CBN or diamond are available.

Single Insert BL8-__AB__-JS3X

Double Insert BL8-__AB__-KX1X

Specify grit size and hardness of insert.

Example: BL8-245AB-NM89-KX1X.

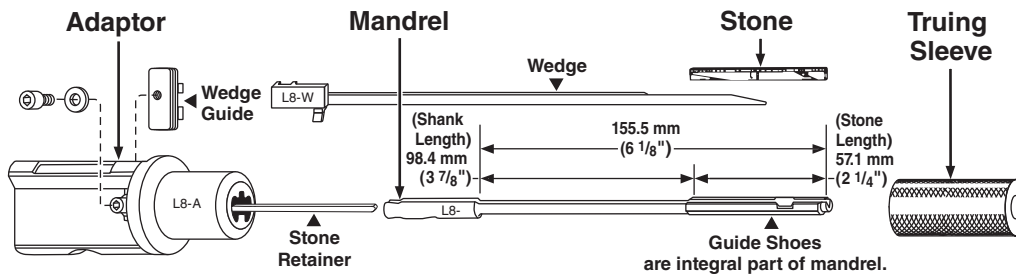
Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

+ Special Order - Contact Customer Service

L8 Honing Units

Extra-Long Shank



L8 Mandrels are like the BL8 Mandrels except the shanks are 50.8 mm (2") longer.
Use only when the BL8 is too short.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 6 per box											
	Hard				L8-A43 L8-A45 L8-A47 L8-A49 L8-A413	L8-A55 L8-A57 L8-A59	L8-A61 L8-A63 L8-A65 L8-A67 L8-A69	L8-A73 L8-A75 L8-A77 L8-A79					
Soft	Hard	Silicon Carbide Stones (J,C) - 6 per box											
	Hard				L8-J45 L8-J47 L8-J49	L8-J55 L8-J57	L8-J63 L8-J65 L8-J67 L8-J69		L8-J83 L8-J85 L8-J87 L8-J89	L8-J93 L8-J95 L8-J97 L8-J99	L8-C05†		
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
	Hard			L8-DM35	L8-DM45	L8-DM55 L8-DM57 L8-DV57 L8-NR51 L8-NR53 L8-NMG57			L8-DM85 L8-DM87 L8-DV87 L8-NR83		L8-DM05 L8-DM07 L8-DV07		L8-DR007 L8-DM005
			L8-NM35 L8-NM39	L8-NM45 L8-NM47	L8-NM55 L8-NM57 L8-NM59	L8-NM65 L8-NM67 L8-NM69			L8-NM85 L8-NM87 L8-NM89	L8-NM95	L8-NM05	L8-NM905	L8-NM005

†For best results, use with bronze mandrel.

Recommended Stones for BL8 and L8 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R_a Surface Finish μm	Approx. R_a Surface Finish μin	Stone to use	Approx. R_a Surface Finish μm	Approx. R_a Surface Finish μin
Deburring: rough holes, all materials						
	L8-A413	—	—	L8-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L8-J57	1,38	55	L8-DM85	1,25	50
Brass, Soft	L8-J63	0,83	33	L8-J63	0,83	33
Bronze	L8-J57	1,38	55	L8-J57	1,38	55
Carbide	L8-DM55	0,50	20	L8-DM55	0,50	20
Cast Iron	L8-J57	0,50	20	L8-DM55	2,00	80
Ceramic	L8-DM55	1,00	40	L8-DM55	1,00	40
Glass	L8-DM55	1,75	70	L8-DM55	1,75	70
Steel, Soft	L8-A57	0,75	30	L8-NM55	1,25	50
Steel, Hardened*	L8-A55	0,30	12	L8-NM55	1,00	40
Steel, Hardened**	L8-A63	0,30	12	—	—	—
Steel, Very Hard***	L8-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	L8-J95	0,30	12	L8-DM05	0,83	33
Brass, Soft	L8-J83	0,40	16	L8-J83	0,40	16
Bronze	L8-J95	0,30	12	L8-J95	0,30	12
Carbide	L8-DM05	0,08	3	L8-DM05	0,08	3
Cast Iron	L8-J95	0,13	5	L8-DM05	0,50	20
Ceramic	L8-DM05	0,38	15	L8-DM05	0,38	15
Glass	L8-DM05	0,38	15	L8-DM05	0,38	15
Steel, Soft	L8-J95	0,10	4	L8-NM05	0,40	16
Steel, Hardened	L8-J83	0,13	5	L8-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

6,10mm - 8,20mm (.240"-.323")

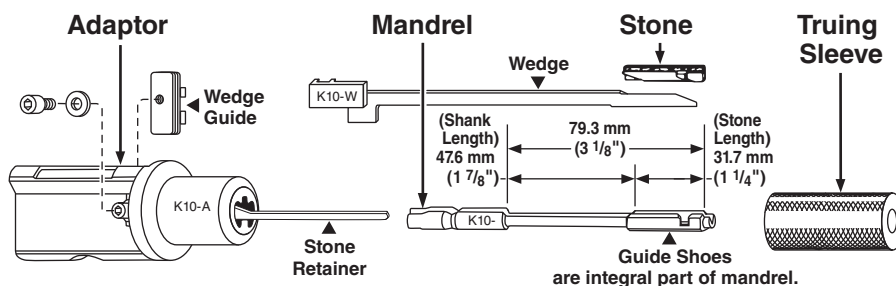
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0250	6,35	1/4	6,10	.240	6,58	.259
ASC-0266	6,75	17/64	6,50	.256	6,99	.275
ASC-0281	7	9/32	6,83	.269	7,32	.288
ASC-0297	7,54	19/64	7,29	.287	7,77	.306
ASC-0312	8	5/16	7,72	.304	8,20	.323

K10

Honing Units

Diameter Range:
7,82 mm – 9,40 mm
.308" – .370"



Order 1-5 For Complete K10 or J-K10 Honing Units

Diameter Range 7,82 mm - 9,40 mm .308" - .370"		1 K10 Mandrel Includes wedge			1 J-K10 Mandrel Includes wedge			2 Truing Sleeve	3 Adapter For J-K10 mandrels order J-K10-A adapter	4 Alignment Bushing	5 Honing Stone	
mm	inches	With Standard Shank			With Extra-Long Shank				With stone retainer and wedge guide	For machines with fully adjustable spindle nose	See All Stone Tables At Right	
		Choose One Suffix			Choose One Suffix							
7,82-8,03	.308-.316	K10-308A	S	H	B	J-K10-308A	S	H	S-308	K10-A		C-308
7,90-8,11	.311-3.19	K10-8MMA	NA	H	NA	N/A	NA	NA	S-8MM	K10-A		C-8MM
8,03-8,20	.316-.323	K10-316A	S	H	B	J-K10-316A	S	H	S-316	K10-A		C-316
8,20-8,41	.323-.331	K10-323A	S	H	B	J-K10-323A	S	H	S-323	K10-A		C-323
8,41-8,61	.331-.339	K10-331A	S	H	B	J-K10-331A	S	H	S-331	K10-A		C-331
8,61-8,81	.339-.347	K10-339A	S	H	B	J-K10-339A	S	H	S-339	K10-A		C-339
8,81-8,99	.347-.354	K10-347A	S	H	B	J-K10-347A	S	H	S-347	K10-A		C-347
8,99-9,19	.354-.362	K10-354A	S	H	B	J-K10-354A	S	H	S-354	K10-A		C-354
9,19-9,40	.362-.370	K10-362A	S	H	B	J-K10-362A	S	H	S-362	K10-A	C-362	

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals. NOTE: J-K10 Mandrels not available in bronze.*

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in KR10+ only.

K10 Mandrel Replacement Parts

K10-W Wedge
Replace when wear *begins* to show
LN-3117A Stone Retainer
LN-3211A Wedge Guide

J-K10 Mandrel Replacement Parts

J-K10-W Wedge
Replace when wear *begins* to show
LN-3608A Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond.

The following mandrels are available from stock: **K10-308ASD**, and **K10-362ASD**. Select appropriate soft steel mandrel and add -D.*

Example: K10-331AS-D.*

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

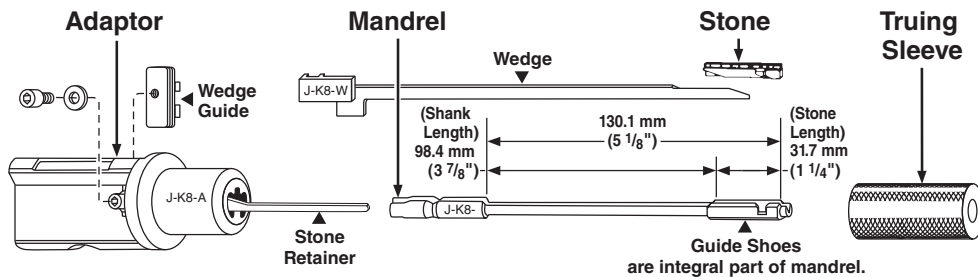
Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

* Special Order - Contact Customer Service



J-K10 Honing Units

Extra-Long
Shank

J-K10 Mandrels are similar to the K10 Mandrels except the shanks are 50.8 mm (2") longer and should be used only when counterbores will not allow holes to be honed properly with standard K10 Mandrels.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box											
					K10-A43 K10-A45 K10-A47 K10-A49 K10-A413	K10-A55 K10-A57 K10-A59	K10-A61 K10-A63 K10-A65 K10-A67 K10-A69	K10-A75 K10-A77 K10-A79					
Soft	Hard	Silicon Carbide Stones (J,C) - 12 per box											
					K10-J45 K10-J47 K10-J49	K10-J55 K10-J57 K10-J59	K10-J63 K10-J65 K10-J67 K10-J69	K10-J83 K10-J85 K10-J87 K10-J89	K10-J93 K10-J95 K10-J97 K10-J99	K10-C05†			
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
			K10-DM35	K10-DMB45 K10-DM45 K10-DM47	K10-DM55 K10-DM57 K10-DV57 K10-NR51 K10-NR53			K10-DM85 K10-DM87 K10-DV87 K10-NR83		K10-DM05 K10-DM07 K10-DV07		K10-DR007 K10-DM005	
		K10-NM35	K10-NM45 K10-NM47	K10-NM55 K10-NMG57 K10-NM57	K10-NM65			K10-NM85 K10-NM87 K10-NM89	K10-NM95	K10-NM05 K10-NM07	K10-NM905	K10-NM005	
		K10-NM39	K10-NM49	K10-NM59	K10-NM67 K10-NM69								

†For best results, use with bronze mandrel.

Recommended Stones for K10 and J-K10 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a µm	µin	Stone to use	Approx. R _a µm	µin
Deburring: rough holes, all materials						
	K10-A413	—	—	K10-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K10-J57	1,38	55	K10-DM85	1,25	50
Brass, Soft	K10-J63	0,83	33	K10-J63	0,83	33
Bronze	K10-J57	1,38	55	K10-J57	1,38	55
Carbide	K10-DM55	0,50	20	K10-DM55	0,50	20
Cast Iron	K10-J57	0,50	20	K10-DM55	2,00	80
Ceramic	K10-DM55	1,00	40	K10-DM55	1,00	40
Glass	K10-DM55	1,75	70	K10-DM55	1,75	70
Steel, Soft	K10-A57	0,75	30	K10-NM55	1,25	50
Steel, Hardened*	K10-A55	0,30	12	K10-NM55	1,00	40
Steel, Hardened**	K10-A63	0,30	12	—	—	—
Steel, Very Hard***	K10-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	K10-J95	0,30	12	K10-DM05	0,83	33
Brass, Soft	K10-J83	0,40	16	K10-J83	0,40	16
Bronze	K10-J95	0,30	12	K10-J95	0,30	12
Carbide	K10-DM05	0,08	3	K10-DM05	0,08	3
Cast Iron	K10-J95	0,13	5	K10-DM05	0,50	20
Ceramic	K10-DM05	0,38	15	K10-DM05	0,38	15
Glass	K10-DM05	0,38	15	K10-DM05	0,38	15
Steel, Soft	K10-J95	0,10	4	K10-NM05	0,40	16
Steel, Hardened	K10-J83	0,13	5	K10-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

7,72mm - 9,75mm (.304"-.384")

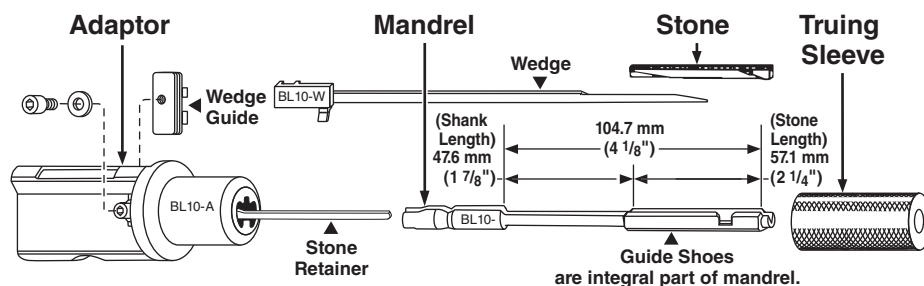
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0312	8	5/16	7,72	.304	8,20	.323
ASC-0328	8,33	21/64	8,08	.318	8,56	.337
ASC-0344	8,73	11/32	8,48	.334	8,97	.353
ASC-0359	9	23/64	8,81	.347	9,30	.366
ASC-0375	9,53	3/8	9,27	.365	9,75	.384

BL10

Honing Units

Diameter Range:
7,82 mm – 9,40 mm
.308" – .370"



Order 1-5 For Complete BL10 or L10 Honing Units

Diameter Range 7,82 mm - 9,40 mm .308" - .370"		1 BL10 Mandrel Includes wedge			1 L10 Mandrel Includes wedge			2 Truing Sleeve		3 Adapter For L10 mandrels order L10-A adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix			With Extra-Long Shank Choose One Suffix					With stone retainer and wedge guide		For machines with fully adjustable spindle nose		See All Stone Tables At Right	
7,82-8,03	.308-.316	BL10-308A	S	H	B	L10-308A	S	H	B	S-308	BL10-A	C-308			
8,03-8,20	.316-.323	BL10-316A	S	H	B	L10-316A	S	H	B	S-316	BL10-A	C-316			
8,20-8,41	.323-.331	BL10-323A	S	H	B	L10-323A	S	H	B	S-323	BL10-A	C-323			
8,41-8,61	.331-.339	BL10-331A	S	H	B	L10-331A	S	H	B	S-331	BL10-A	C-331			
8,61-8,81	.339-.347	BL10-339A	S	H	B	L10-339A	S	H	B	S-339	BL10-A	C-339			
8,81-8,99	.347-.354	BL10-347A	S	H	B	L10-347A	S	H	B	S-347	BL10-A	C-347			
8,99-9,19	.354-.362	BL10-354A	S	H	B	L10-354A	S	H	B	S-354	BL10-A	C-354			
9,19-9,40	.362-.370	BL10-362A	S	H	B	L10-362A	S	H	B	S-362	BL10-A	C-362			

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrels for very fine finishes and honing exotic metals.*

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in BLR10+ only.

BL10 Mandrel Replacement Parts

BL10-W Wedge
 Replace when wear *begins* to show
LN-3117A Stone Retainer
LN-3211A Wedge Guide

L10 Mandrel Replacement Parts

L10-W Wedge
 Replace when wear *begins* to show
LN-3608A Stone Retainer
LN-3211A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrel is available from stock:
BL10-308AS-D. Select appropriate soft steel mandrel and add -D.*

Example: BL8-308AS-D. BL10-316AS-D.*

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert BL10-____AB____-JS3X
Double Insert BL10-____AB____-KX1X

Specify grit size and hardness of insert.

Example: BL10-308AB-NM89-KX1X

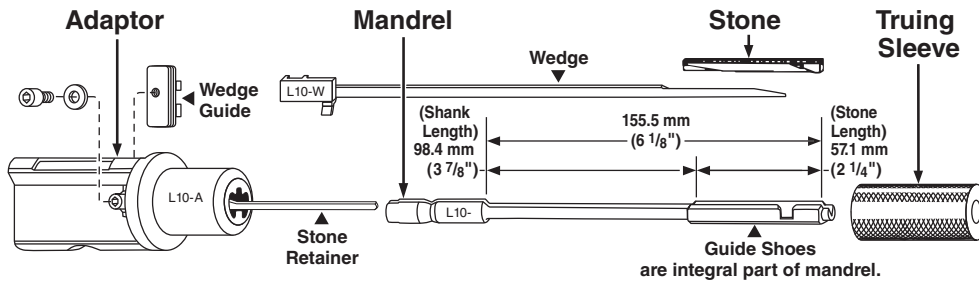
Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

* Special Order - Contact Customer Service

L10 Honing Units

Extra-Long Shank



L10 Mandrels are like BL6 Mandrels except the shanks are 50.8 mm (2") longer.
Use only when BL10 is too short

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 6 per box											
	Hard				L10-A43 L10-A45 L10-A47 L10-A49 L10-A413	L10-A55 L10-A57 L10-A59	L10-A61 L10-A63 L10-A65 L10-A67 L10-A69	L10-A75 L10-A77 L10-A79					
Soft	Hard	Silicon Carbide Stones (J,C) - 6 per box											
	Hard				L10-J45 L10-J47 L10-J49	L10-J55 L10-J57 L10-J59	L10-J63 L10-J65 L10-J67 L10-J69		L10-J83 L10-J85 L10-J87 L10-J89	L10-J93 L10-J95 L10-J97 L10-J99	L10-C05†		
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
	Hard		L10-DM35	L10-DMB45 L10-DM45	L10-DM55 L10-DM57 L10-DV57 L10-NR51 L10-NR53				L10-DM85 L10-DM87 L10-DV87		L10-DM05 L10-DM07 L10-DV07		L10-DR007 L10-DM005
			L10-NM35 L10-NM39	L10-NM45 L10-NM47	L10-NMG57 L10-NM55 L10-NM57 L10-NM59	L10-NM65 L10-NM67			L10-NM85 L10-NM87	L10-NM95	L10-NM05	L10-NM905	L10-NM005

†For best results, use with bronze mandrel.

Recommended Stones for BL10 and L10 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	L10-A413	—	—	L10-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L10-J57	1,38	55	L10-DM85	1,25	50
Brass, Soft	L10-J63	0,83	33	L10-J63	0,83	33
Bronze	L10-J57	1,38	55	L10-J57	1,38	55
Carbide	L10-DM55	0,50	20	L10-DM55	0,50	20
Cast Iron	L10-J57	0,50	20	L10-DM55	2,00	80
Ceramic	L10-DM55	1,00	40	L10-DM55	1,00	40
Glass	L10-DM55	1,75	70	L10-DM55	1,75	70
Steel, Soft	L10-A57	0,75	30	L10-NM55	1,25	50
Steel, Hardened*	L10-A55	0,30	12	L10-NM55	1,00	40
Steel, Hardened**	L10-A63	0,30	12	—	—	—
Steel, Very Hard***	L10-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	L10-J95	0,30	12	L10-DM05	0,83	33
Brass, Soft	L10-J83	0,40	16	L10-J83	0,40	16
Bronze	L10-J95	0,30	12	L10-J95	0,30	12
Carbide	L10-DM05	0,08	3	L10-DM05	0,08	3
Cast Iron	L10-J95	0,13	5	L10-DM05	0,50	20
Ceramic	L10-DM05	0,38	15	L10-DM05	0,38	15
Glass	L10-DM05	0,38	15	L10-DM05	0,38	15
Steel, Soft	L10-J95	0,10	4	L10-NM05	0,40	16
Steel, Hardened	L10-J83	0,13	5	L10-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

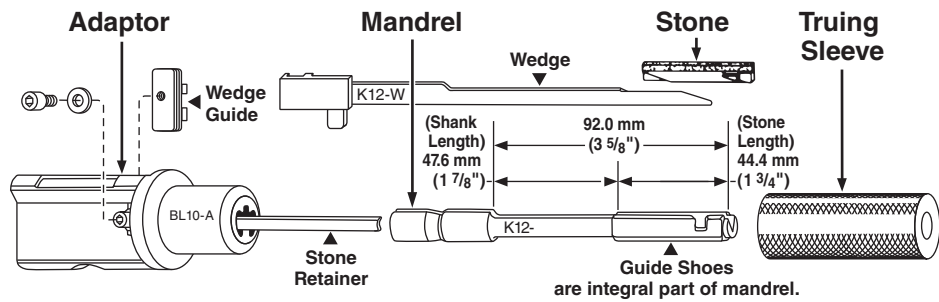
7,72mm - 9,75mm (.304"-.334")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0312	8	5/16	7,72	.304	8,20	.323
ASC-0328	8,33	21/64	8,08	.318	8,56	.337
ASC-0344	8,73	11/32	8,48	.334	8,97	.353
ASC-0359	9	23/64	8,81	.347	9,30	.366
ASC-0375	9,53	3/8	9,27	.365	9,75	.384

K12 Honing Units

Diameter Range:
9,40 mm – 12,57 mm
.370" – .495"



Order 1-5 For Complete K12 or J-K12 Honing Units

Diameter Range 9,40 mm – 12,57 mm .370" – .495"		1 K12 Mandrel Includes wedge	1 J-K12 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter For J-K12 mandrels order J-K12-A adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	With Standard Shank Choose One Suffix			With stone retainer and wedge guide	For machines with fully adjustable spindle nose	See All Stone Tables At Right
9,40-9,78	.370-.385	K12-370A	S H B	J-K12-370A	S H	S-370	
9,78-10,16	.385-.400	K12-385A	S H B	J-K12-385A	S H	S-385	
9,90-10,28	.389-.405	K12-10MMA	— H —	N/A	NA NA	S-10MM	
10,16-10,57	.400-.416	K12-400A	S H B	J-K12-400A	S H	S-400	
10,57-10,97	.416-.432	K12-416A	S H B	J-K12-416A	S H	S-416	
10,97-11,35	.432-.447	K12-432A	S H B	J-K12-432A	S H	S-432	
11,35-11,76	.447-.463	K12-447A	S H B	J-K12-447A	S H	S-447	
11,76-12,17	.463-.479	K12-463A	S H B	J-K12-463A	S H	S-463	
11,90-12,31	.468-.485	K12-12MMA	— H —	N/A	NA NA	S-12MM	
12,17-12,57	.479-.495	K12-479A	S H B	J-K12-479A	S H	S-479	

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrels for very fine finishes and honing exotic metals.
NOTE: J-K12 Mandrels not available in bronze.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in KR12+ only.

K12 Mandrel Replacement Parts

K12-W Wedge
Replace when wear **begins** to show
LN-3167A Stone Retainer
LN-3214A Wedge Guide

J-K12 Mandrel Replacement Parts

J-K12-W Wedge
Replace when wear **begins** to show
LN-3702A Stone Retainer
LN-3214A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond.

The following mandrels are available from stock: **K12-370ASD**, **K12-385ASD**, **K12-400ASD**, **K12-432ASD**, **K12-463ASD**. Select appropriate soft steel mandrel and add -D.+

Example: K12-416AS-D.+

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Multi-Stone Honing Units+

Available in 2, 3, 4 or 5 stone lengths, these mandrels can solve problems when honing multiland bores, long bores needing bow removal or long bores machined from both ends. All mandrels are soft steel with integral shoes. Carbide, stone-inserted, or diamond plated (220 grit) guide shoes are available for extended mandrel life.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert Mandrel

K12-__AB__-JS3X

Double Insert Mandrel

K12-__AB__-KX1X

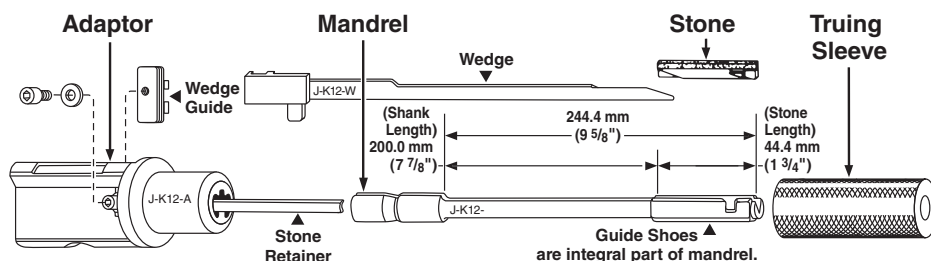
Specify grit size and hardness of insert.

Example: K12-370AB-NM89-KX1X

+ Special Order - Contact Customer Service

J-K12 Honing Units

Extra-Long
Shank



J-K12 Mandrels are similar to the K12 Mandrels except the shanks are 152.4 mm (6") longer and should be used only when counterbores will not allow holes to be honed properly with standard K12 Mandrels.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box											
					K12-A43 K12-A45 K12-A47	K12-A55	K12-A61 K12-A63 K12-A65	K12-A75					
					K12-A49 K12-A411 K12-A413	K12-A57 K12-A5701A K12-A59	K12-A67 K12-A69	K12-A77 K12-A79					
Soft	Hard	Silicon Carbide Stones (J,C) - 12 per box											
					K12-J45 K12-J47 K12-J49	K12-J55	K12-J63 K12-J65		K12-J83 K12-J85 K12-J8501A K12-J87 K12-J8701A K12-J89	K12-J93 K12-J95	K12-C05†		
						K12-J57 K12-J5701A K12-J59	K12-J67 K12-J69			K12-J97 K12-J99			
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
			K12-DM35	K12-DMB45 K12-DM45 K12-DM47	K12-DMB55 K12-DM55 K12-DM57				K12-DM85 K12-DM87		K12-DM05 K12-DM07		K12-DR007 K12-DM005
				K12-DV47	K12-DV57				K12-DV87		K12-DV07		
Soft	Hard				K12-NR51 K12-NR53 K12-NMG57				K12-NR83				
		K12-NM35 K12-NM37 K12-NM39	K12-NM45 K12-NM47	K12-NM55 K12-NM57 K12-NM59	K12-NM65 K12-NM67 K12-NM69				K12-NM85 K12-NM87 K12-NM89	K12-NM95	K12-NM05 K12-NM07	K12-NM905	K12-NM005

†For best results, use with bronze mandrel.

Recommended Stones for K12 and J-K12 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	K12-A413	—	—	K12-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K12-J57	1,38	55	K12-DM85	1,25	50
Brass, Soft	K12-J63	0,83	33	K12-J63	0,83	33
Bronze	K12-J57	1,38	55	K12-J57	1,38	55
Carbide	K12-DM55	0,50	20	K12-DM55	0,50	20
Cast Iron	K12-J57	0,50	20	K12-DM55	2,00	80
Ceramic	K12-DM55	1,00	40	K12-DM55	1,00	40
Glass	K12-DM55	1,75	70	K12-DM55	1,75	70
Steel, Soft	K12-A57	0,75	30	K12-NM55	1,25	50
Steel, Hardened*	K12-A55	0,30	12	K12-NM55	1,00	40
Steel, Hardened**	K12-A63	0,30	12	—	—	—
Steel, Very Hard***	K12-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	K12-J95	0,30	12	K12-DM05	0,83	33
Brass, Soft	K12-J83	0,40	16	K12-J83	0,40	16
Bronze	K12-J95	0,30	12	K12-J95	0,30	12
Carbide	K12-DM05	0,08	3	K12-DM05	0,08	3
Cast Iron	K12-J95	0,13	5	K12-DM05	0,50	20
Ceramic	K12-DM05	0,38	15	K12-DM05	0,38	15
Glass	K12-DM05	0,38	15	K12-DM05	0,38	15
Steel, Soft	K12-J95	0,10	4	K12-NM05	0,40	16
Steel, Hardened	K12-J83	0,13	5	K12-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

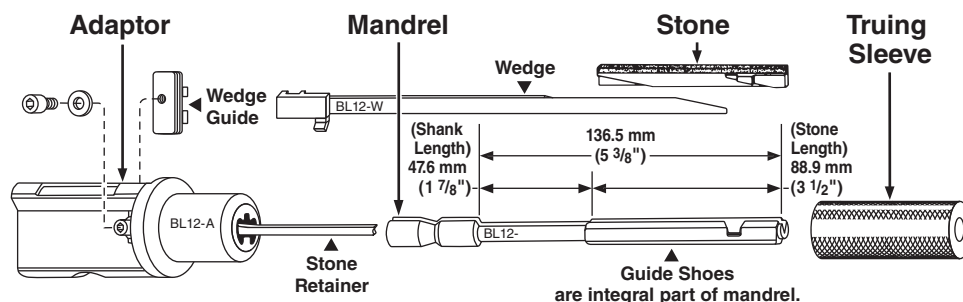
9,27mm - 12,52mm (.365"-.509")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low		High	
	mm	in	mm	in	mm	in
ASC-0375	9,53	3/8	9,27	.365	9,75	.384
ASC-0391	10	25/64	9,73	.383	10,21	.402
ASC-0406	10,32	13/32	10,06	.396	10,54	.415
ASC-0422	10,72	27/64	10,47	.412	10,95	.431
ASC-0438	11	7/16	10,82	.426	11,30	.445
ASC-0453	11,51	29/64	11,25	.443	11,74	.462
ASC-0469	12	15/32	11,71	.461	12,19	.480
ASC-0484	12,3	31/64	12,04	.474	12,52	.493
ASC-0500	12,7	1/2	12,45	.490	12,93	.509

BL12 Honing Units

Diameter Range:
9,40 mm – 12,57 mm
.370" – .495"



Order 1-5 For Complete BL12 or L12 Honing Units

Diameter Range 9,40 mm - 12,57 mm .370" - .495"		1 BL12 Mandrel Includes wedge				1 L12 Mandrel Includes wedge				2 Truing Sleeve		3 Adapter For L12 mandrels order L12-A adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank				With Extra-Long Shank					With stone retainer and wedge guide	For machines with fully adjustable spindle nose		See All Stone Tables At Right			
		Choose One Suffix				Choose One Suffix											
9,40-9,78	.370-.385	BL12-370A	S	H	B	L12-370A	S	H	B	S-370	BL12-A	C-370					
9,78-10,16	.385-.400	BL12-385A	S	H	B	L12-385A	S	H	B	S-385	BL12-A	C-385					
10,16-10,57	.400-.416	BL12-400A	S	H	B	L12-400A	S	H	B	S-400	BL12-A	C-400					
10,57-10,97	.416-.432	BL12-416A	S	H	B	L12-416A	S	H	B	S-416	BL12-A	C-416					
10,97-11,35	.432-.447	BL12-432A	S	H	B	L12-432A	S	H	B	S-432	BL12-A	C-432					
11,35-11,76	.447-.463	BL12-447A	S	H	B	L12-447A	S	H	B	S-447	BL12-A	C-447					
11,76-12,17	.463-.479	BL12-463A	S	H	B	L12-463A	S	H	B	S-463	BL12-A	C-463					
12,17-12,57	.479-.495	BL12-479A	S	H	B	L12-479A	S	H	B	S-479	BL12-A	C-479					

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes, for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrels for producing very fine finishes and honing exotic metals.*

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.

BL12 Mandrel Replacement Parts

BL12-W Wedge
Replace when wear *begins* to show
LN-3167A Stone Retainer
LN-3214A Wedge Guide

L12 Mandrel Replacement Parts

L12-W Wedge
Replace when wear *begins* to show
LN-3658A Stone Retainer
LN-3214A Wedge Guide

Diamond Plated Super Mandrels*

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels available from stock:
BL12-370ASD, L12-370ASD, BL12-432ASD.
Select appropriate soft steel mandrel and add -D.*

Example: BL12-385AS-D.*

Carbide Shoe Mandrels*

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels*

Available for honing parts that are too long to be honed with a standard mandrel.

Metal Bond Superabrasive Insert Mandrels*

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert BL12-__AB__-JS3X
Double Insert BL12-__AB__-KX1X

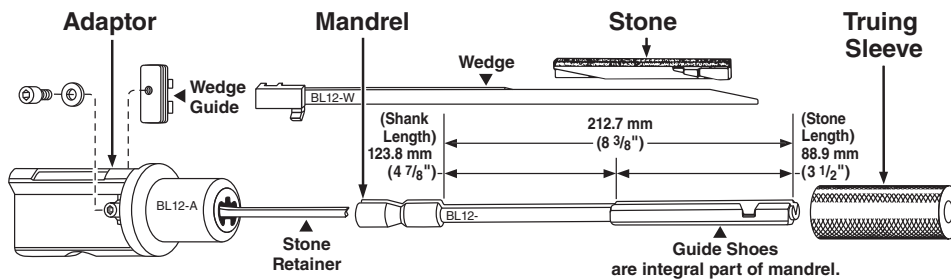
Specify grit size and hardness of insert.

Example: BL12-370AB-NM89-KX1X

Tandem "In-Line" Mandrels*

Sunnen Honing Units can be used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

* Special Order - Contact Customer Service



L12 Mandrels are like the BL12 Mandrels except the shanks are 76.2 mm (3") longer.
Use only when the BL12 is too short.

L12

Honing Units

Extra-Long Shank

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones													
Grit Size													
70 80 100 150 220 280 320 400 500 600 900 1200													
Hard-----Soft	Aluminum Oxide Stones (A) - 6 per box												
				L12-A43 L12-A45 L12-A47	L12-A55 L12-A57	L12-A61 L12-A63 L12-A65 L12-A67	L12-A75 L12-A77						
				L12-A49	L12-A59	L12-A69	L12-A79						
				L12-A413									
Hard-----Soft	Silicon Carbide Stones (J,C) - 6 per box												
				L12-J45	L12-J55	L12-J63 L12-J65		L12-J83 L12-J85	L12-J93 L12-J95	L12-C05†			
				L12-J47	L12-J57	L12-J67		L12-J87	L12-J97				
				L12-J49	L12-J59	L12-J69		L12-J89	L12-J99				
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box												
		L12-DM35	L12-DMB45 L12-DM45	L12-DM55 L12-DM57 L12-DV57			L12-DM85 L12-DM87 L12-DV87		L12-DM05 L12-DV07		L12-DR007 L12-DM005		
				L12-NR51 L12-NR53 L12-NMG57			L12-NR83						
		L12-NM35 L12-NM39	L12-NM45 L12-NM47	L12-NM55 L12-NM57 L12-NM59	L12-NM65 L12-NM67 L12-NM69		L12-NM85 L12-NM87	L12-NM95	L12-NM05	L12-NM905	L12-NM005		

†For best results, use with bronze mandrel.

Recommended Stones for BL12 and L12 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	L12-A413	—	—	L12-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L12-J57	1,38	55	L12-DM85	1,25	50
Brass, Soft	L12-J63	0,83	33	L12-J63	0,83	33
Bronze	L12-J57	1,38	55	L12-J57	1,38	55
Carbide	L12-DM55	0,50	20	L12-DM55	0,50	20
Cast Iron	L12-J57	0,50	20	L12-DM55	2,00	80
Ceramic	L12-DM55	1,00	40	L12-DM55	1,00	40
Glass	L12-DM55	1,75	70	L12-DM55	1,75	70
Steel, Soft	L12-A57	0,75	30	L12-NM55	1,25	50
Steel, Hardened*	L12-A55	0,30	12	L12-NM55	1,00	40
Steel, Hardened**	L12-A63	0,30	12	—	—	—
Steel, Very Hard***	L12-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	L12-J95	0,30	12	L12-DM05	0,83	33
Brass, Soft	L12-J83	0,40	16	L12-J83	0,40	16
Bronze	L12-J95	0,30	12	L12-J95	0,30	12
Carbide	L12-DM05	0,08	3	L12-DM05	0,08	3
Cast Iron	L12-J95	0,13	5	L12-DM05	0,50	20
Ceramic	L12-DM05	0,38	15	L12-DM05	0,38	15
Glass	L12-DM05	0,38	15	L12-DM05	0,38	15
Steel, Soft	L12-J95	0,10	4	L12-NM05	0,40	16
Steel, Hardened	L12-J83	0,13	5	L12-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

9,27mm - 12,52mm (.365"-.509")

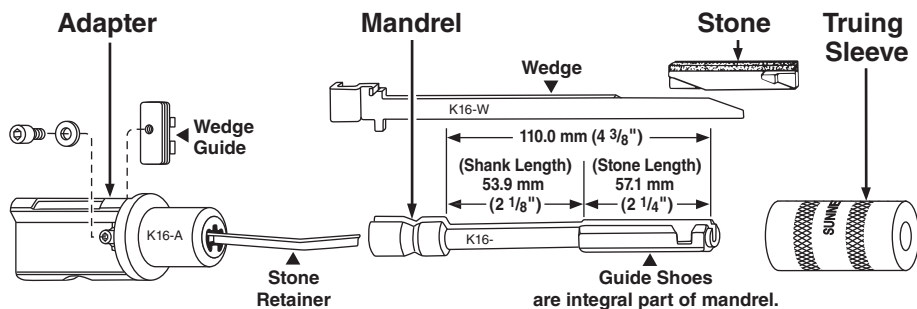
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0375	9,53	3/8	9,27	.365	9,75	.384
ASC-0391	10	25/64	9,73	.383	10,21	.402
ASC-0406	10,32	13/32	10,06	.396	10,54	.415
ASC-0422	10,72	27/64	10,47	.412	10,95	.431
ASC-0438	11	7/16	10,82	.426	11,30	.445
ASC-0453	11,51	29/64	11,25	.443	11,74	.462
ASC-0469	12	15/32	11,71	.461	12,19	.480
ASC-0484	12,3	31/64	12,04	.474	12,52	.493
ASC-0500	12,7	1/2	12,45	.490	12,93	.509

K16

Honing Units

Diameter Range:
12,57 mm – 15,72 mm
.495" – .619"



Order 1-5 For Complete K16 or J-K16 Honing Units

Diameter Range 12,57 mm - 15,72 mm .495" - .619"		1 K16 Mandrel Includes wedge	1 J-K16 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter For J-K16 mandrels order J-K16-A adapter	4 Alignment Bushing	5 Honing Stone
		With Standard Shank Choose One Suffix	With Extra-Long Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
mm	inches						
12,57-13,36	.495-.526	K16-495A S H B	J-K16-495A S H	S-495	K16-A	C-495	See All Stone Tables At Right Most stones in parentheses available 2 weeks after receipt of order.
13,36-14,15	.526-.557	K16-526A S H B	J-K16-526A S H	S-526	K16-A	C-526	
13,90-14,69	.547-.578	K16-14MMA NA H NA	N/A NA NA	S-14MM	K16-A	C-14MM	
14,15-14,94	.557-.588	K16-557A S H B	J-K16-557A S H	S-557	K16-A	C-557	
14,94-15,72	.588-.619	K16-588A S H B	J-K16-588A S H	S-588	K16-A	C-588	

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for producing very fine finishes and honing exotic metals.
NOTE: J-K16 Mandrels not available in bronze.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in KR16+ only.

K16 Mandrel Replacement Parts

K16-W Wedge
 Replace when wear **begins** to show
LN-3686A Stone Retainer
LN-3217A Wedge Guide

J-K16 Mandrel Replacement Parts

J-K16-W Wedge
 Replace when wear **begins** to show
LN-3703A Stone Retainer
LN-3217A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond.

The following mandrels are available from stock: **K16-495ASD**, **K16-557ASD**, **K16-588ASD**. Select appropriate soft steel mandrel and add -D+.

Example: K16-526AS-D+.

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert Mandrel

K16-__AB__JS3X

Double Insert Mandrel

K16-__AB-__KX1X

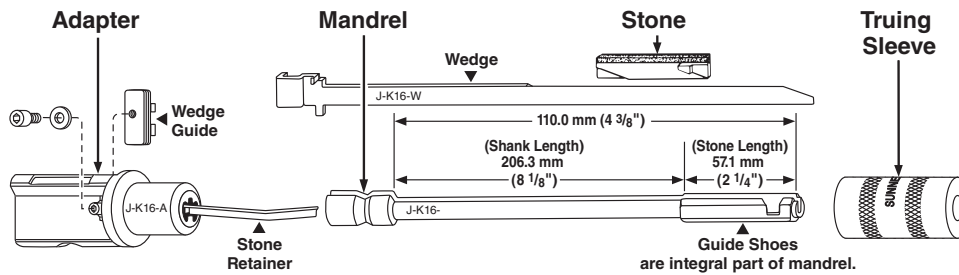
Specify grit size and hardness of insert.

Example: K16-495AB-NM89-KX1X.

+ Special Order - Contact Customer Service

J-K16 Honing Units

Extra-Long
Shank



J-K16 Mandrels are similar to the K16 Mandrels except the shanks are 152.4 mm (6\") longer and should be used only when counterbores will not allow holes to be honed properly with standard K16 Mandrels.

In some cases, stones other than the **RECOMMENDED STONES** may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones

		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Soft	Aluminum Oxide Stones (A) - 12 per box												
					K16-A43 K16-A45 K16-A47	K16-A53 K16-A55 K16-A56 K16-A57 K16-A5701A K16-A59	K16-A61 K16-A63 K16-A65 K16-A67 K16-A69	K16-A75 K16-A77 K16-A79					
Hard	Silicon Carbide Stones (J,C) - 12 per box												
					K16-J45 K16-J47 K16-J49	K16-J55 K16-J57	K16-J63 K16-J65 K16-J67 K16-J69	K16-J83 K16-J85 K16-J87 K16-J89	K16-J93 K16-J95 K16-J97 K16-J99	K16-C05†			
Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box												
			K16-DM35	K16-DMB45 K16-DM45 K16-DM47 K16-DV47	K16-DMB55 K16-DM55 K16-DM57 K16-DV57	K16-NR51 K16-NR53 K16-NMG57	K16-DM85 K16-DM87 K16-DV87 K16-NR83	K16-DM05 K16-DM07 K16-DV07	K16-DM007 K16-DM005				
Hard			K16-NM35 K16-NM37 K16-NM39	K16-NM45 K16-NM47 K16-NM49	K16-NM55 K16-NM57 K16-NM59	K16-NM65 K16-NM67 K16-NM69	K16-NM85 K16-NM87	K16-NM95 K16-NM97	K16-NM05 K16-NM905	K16-NM005			

†For best results, use with bronze mandrel.

Recommended Stones for K16 and J-K16 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a µm	Approx. R _a µin	Stone to use	Approx. R _a µm	Approx. R _a µin
Deburring: rough holes, all materials						
	K16-A413	—	—	K16-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K16-J57	1,38	55	K16-DM85	1,25	50
Brass, Soft	K16-J63	0,83	33	K16-J63	0,83	33
Bronze	K16-J57	1,38	55	K16-J57	1,38	55
Carbide	K16-DM55	0,50	20	K16-DM55	0,50	20
Cast Iron	K16-J57	0,50	20	K16-DM55	2,00	80
Ceramic	K16-DM55	1,00	40	K16-DM55	1,00	40
Glass	K16-DM55	1,75	70	K16-DM55	1,75	70
Steel, Soft	K16-A57	0,75	30	K16-NM55	1,25	50
Steel, Hardened*	K16-A55	0,30	12	K16-NM55	1,00	40
Steel, Hardened**	K16-A63	0,30	12	—	—	—
Steel, Very Hard***	K16-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	K16-J95	0,30	12	K16-DM05	0,83	33
Brass, Soft	K16-J83	0,40	16	K16-J83	0,40	16
Bronze	K16-J95	0,30	12	K16-J95	0,30	12
Carbide	K16-DM05	0,08	3	K16-DM05	0,08	3
Cast Iron	K16-J95	0,13	5	K16-DM05	0,50	20
Ceramic	K16-DM05	0,38	15	K16-DM05	0,38	15
Glass	K16-DM05	0,38	15	K16-DM05	0,38	15
Steel, Soft	K16-J95	0,10	4	K16-NM05	0,40	16
Steel, Hardened	K16-J83	0,13	5	K16-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

12,45mm - 16,10mm (.490"-.634")

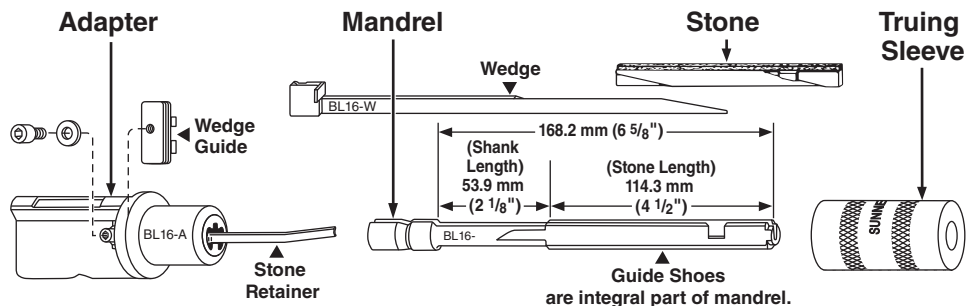
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low	mm	in	High
ASC-0500	12,7	1/2	12,45	.490	12,93	.509
ASC-0516	13	33/64	12,83	.505	13,31	.524
ASC-0531	13,50	17/32	13,23	.521	13,72	.540
ASC-0547	14	35/64	13,72	.540	14,20	.559
ASC-0562	14,29	9/16	14,02	.552	14,50	.571
ASC-0578	14,68	37/64	14,43	.568	14,91	.587
ASC-0594	15	19/32	14,81	.583	15,29	.602
ASC-0609	15,48	39/64	15,22	.599	15,70	.618
ASC-0625	15,88	5/8	15,62	.615	16,10	.634

BL16

Honing Units

Diameter Range:
12,57 mm – 15,72 mm
.495" – .619"



Order 1-5 For Complete BL16 or L16 Honing Units

Diameter Range 12,57 mm - 15,72 mm .495" - .619"		1 BL16 Mandrel Includes wedge		1 L16 Mandrel Includes wedge		2 Truing Sleeve		3 Adapter For L16 mandrels order L16-A adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix		With Extra-Long Shank Choose One Suffix				With stone retainer and wedge guide		For machines with fully adjustable spindle nose			
12,57-13,36	.495-.526	BL16-495A	S H B	L16-495A	S H B	S-495		BL16-A		C-495		See All Stone Tables At Right	
13,36-14,15	.526-.557	BL16-526A	S H B	L16-526A	S H B	S-526		BL16-A		C-526			
14,15-14,94	.557-.588	BL16-557A	S H B	L16-557A	S H B	S-557		BL16-A		C-557			
14,94-15,72	.588-.619	BL16-588A	S H B	L16-588A	S H B	S-588		BL16-A		C-588			

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for producing very fine finishes and honing exotic metals.*

BL16 Mandrel Replacement Parts

BL16-W Wedge
Replace when wear *begins* to show
LN-3686A Stone Retainer
LN-3217A Wedge Guide

L16 Mandrel Replacement Parts

L16-W Wedge
Replace when wear *begins* to show
LN-3690A Stone Retainer
LN-3217A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels available from stock: **BL16-495AS-D**, **BL16-526AS-D**, **BL16-557AS-D**, or **BL16-588AS-D**. Select appropriate soft steel mandrel and add -D+.

Example: BL16-495AS-D+.

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert Mandrel

BL16-__AB__JS3X

Double Insert Mandrel

BL16-__AB__KX1X

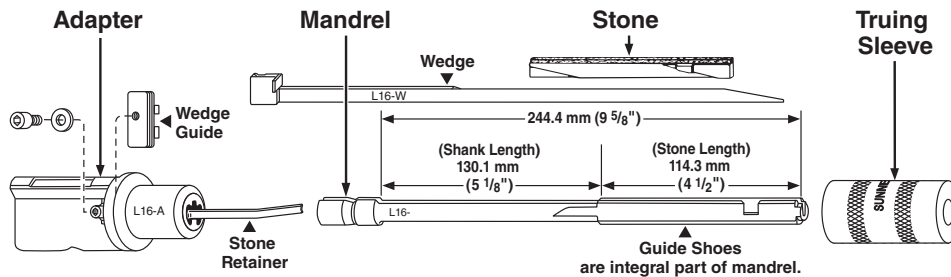
Specify grit size and hardness of insert.

Example: BL16-245AB-NM89-KX1X

* Special Order - Contact Customer Service

L16 Honing Units

Extra-Long Shank



L16 Mandrels are like the BL16 Mandrels except the shanks are 76.2 mm (3") longer.
Use only when the BL16 is too short.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones

	Grit Size											
	70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Aluminum Oxide Stones (A) - 6 per box											
				L16-A43 L16-A45	L16-A55	L16-A61 L16-A63 L16-A65	L16-A75					
				L16-A47	L16-A57	L16-A67	L16-A77					
				L16-A49	L16-A59	L16-A69	L16-A79					
				L16-A413								
Hard-----Soft	Silicon Carbide Stones (J,C) - 6 per box											
				L16-J45	L16-J55	L16-J63 L16-J65		L16-J83 L16-J85	L16-J93 L16-J95	L16-C05†		
				L16-J47	L16-J57	L16-J67		L16-J87	L16-J97			
				L16-J49		L16-J69		L16-J89	L16-J99			
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
			L16-DM35	L16-DMB45	L16-DM55			L16-DM85		L16-DM05		L16-DR007 L16-DM005
					L16-DV57 L16-NR51 L16-NR53 L16-NMG57			L16-DM87 L16-DV87		L16-DV07		
			L16-NM35 L16-NM39	L16-NM45 L16-NM47	L16-NM55 L16-NM57 L16-NM59	L16-NM65 L16-NM67		L16-NM85 L16-NM87	L16-NM95	L16-NM05	L16-NM905	L16-NM005

†For best results, use with bronze mandrel.

Recommended Stones for BL16 and L16 Mandrels

Material	Low-Volume		High-Volume	
	Stone to use	Approx. R _a Surface Finish µm µin	Stone to use	Approx. R _a Surface Finish µm µin
Deburring: rough holes, all materials				
	L16-A413	—	L16-A413	—
Fast removal: deburred, bored, ground, reamed holes				
Aluminum	L16-J57	1,38 55	L16-DM85	1,25 50
Brass, Soft	L16-J63	0,83 33	L16-J63	0,83 33
Bronze	L16-J57	1,38 55	L16-J57	1,38 55
Carbide	L16-DM55	0,50 20	L16-DM55	0,50 20
Cast Iron	L16-J57	0,50 20	L16-DM55	2,00 80
Ceramic	L16-DM55	1,00 40	L16-DM55	1,00 40
Glass	L16-DM55	1,75 70	L16-DM55	1,75 70
Steel, Soft	L16-A57	0,75 30	L16-NM55	1,25 50
Steel, Hardened*	L16-A55	0,30 12	L16-NM55	1,00 40
Steel, Hardened**	L16-A63	0,30 12	—	—
Steel, Very Hard***	L16-NM55	1,00 40	—	—
Fine finishing: previously honed holes				
Aluminum	L16-J95	0,30 12	L16-DM05	0,83 33
Brass, Soft	L16-J83	0,40 16	L16-J83	0,40 16
Bronze	L16-J95	0,30 12	L16-J95	0,30 12
Carbide	L16-DM05	0,08 3	L16-DM05	0,08 3
Cast Iron	L16-J95	0,13 5	L16-DM05	0,50 20
Ceramic	L16-DM05	0,38 15	L16-DM05	0,38 15
Glass	L16-DM05	0,38 15	L16-DM05	0,38 15
Steel, Soft	L16-J95	0,10 4	L16-NM05	0,40 16
Steel, Hardened	L16-J83	0,13 5	L16-NM05	0,18 7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

12,45mm - 16,10mm (.490"-.634")

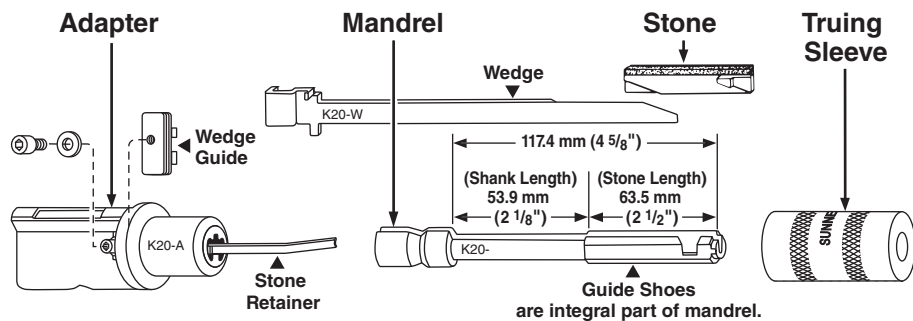
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low		High	
ASC-0500	12,7	1/2	12,45	.490	12,93	.509
ASC-0516	13	33/64	12,83	.505	13,31	.524
ASC-0531	13,50	17/32	13,23	.521	13,72	.540
ASC-0547	14	35/64	13,72	.540	14,20	.559
ASC-0562	14,29	9/16	14,02	.552	14,50	.571
ASC-0578	14,68	37/64	14,43	.568	14,91	.587
ASC-0594	15	19/32	14,81	.583	15,29	.602
ASC-0609	15,48	39/64	15,22	.599	15,70	.618
ASC-0625	15,88	5/8	15,62	.615	16,10	.634

K20

Honing Units

Diameter Range:
15,72 mm – 18,90 mm
.619" – .744"



Order 1-5 For Complete K20 or J-K20 Honing Units

Diameter Range 15,72 mm - 18,90 mm .619" - .744"		1 K20 Mandrel Includes wedge				1 J-K20 Mandrel Includes wedge				2 Truing Sleeve		3 Adapter For J-K20 mandrels order J-K20-A adapter		4 Alignment Bushing		5 Honing Stone	
		With Standard Shank				With Extra-Long Shank						With stone retainer and wedge guide		For machines with fully adjustable spindle nose			
mm	inches	Choose One Suffix				Choose One Suffix											
15,72-16,51	.619-.650	K20-619A	S	H	B	J-K20-619A	S	H		S-619		K20-A		C-619	See All Stone Tables At Right		
15,90-16,69	.625-.657	K20-16MMA	NA	H	NA	N/A	NA	NA		S-16MM		K20-A		C-16MM			
16,51-17,30	.650-.681	K20-650A	S	H	B	J-K20-650A	S	H		S-650		K20-A		C-650			
16,90-17,69	.665-.697	K20-17MMA	NA	H	NA	N/A	NA	NA		S-17MM		K20-A		C-17MM			
17,30-18,11	.681-.713	K20-681A	S	H	B	J-K20-681A	S	H		S-681		K20-A		C-681			
17,90-18,71	.704-.737	K20-18MMA	NA	H	NA	N/A	NA	NA		S-18MM		K20-A		C-18MM			
18.11-18.90	.713-.744	K20-713A	S	H	B	J-K20-713A	S	H		S-713		K20-A		C-713			

Mandrel Options

S = Steel Mandrel w/ soft shoes, for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.
NOTE: J-K20 Mandrels not available in bronze.

Retractable Mandrels

For high production, automation and high stress loads using superabrasive stones. See page 2.86.
NOTE: Available in KR20+ only.

K20 Mandrel Replacement Parts

K20-W Wedge
 Replace when wear *begins* to show
LN-3688A Stone Retainer
LN-3218A Wedge Guide

J-K20 Mandrel Replacement Parts

J-K20-W Wedge
 Replace when wear *begins* to show
LN-3704A Stone Retainer
LN-3218A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. The following mandrels available from stock: **K20-619ASD**, **K20-681ASD**, **K20-713ASD**. Select appropriate soft steel mandrel and add -D.+

Example: K20-650AS-D.+

Carbide Shoe Mandrels+

Two types are available for high-production applications...in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert Mandrel

K20-__AB__JS3X

Double Insert Mandrel

K20-__AB__KX1X

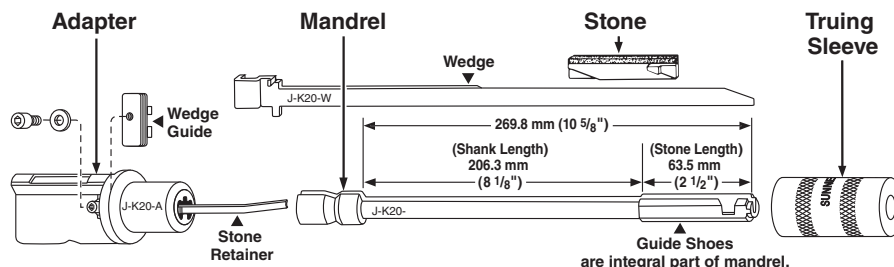
Specify grit size and hardness of insert.

Example: K20-245AB-NM89-KX1X

+ Special Order - Contact Customer Service

J-K20 Honing Units

Extra-Long Shank



J-K20 Mandrels are similar to the K20 Mandrels except the shanks are 152.4 mm (6") longer and should be used only when counterbores will not allow holes to be honed properly with standard K20 Mandrels.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Available Stones

Aluminum Oxide Stones (A)					Grit Size											
					70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box															
	K20-A27			K20-A43	K20-A53	K20-A61										
				K20-A45	K20-A55	K20-A63										
			K20-A47	K20-A57	K20-A65	K20-A77										
				K20-A5701A												
			K20-A49	K20-A58	K20-A68	K20-A79										
			K20-A411	K20-A59	K20-A69											
			K20-A413													
Hard-----Soft	Silicon Carbide Stones (J,C) - 12 per box															
	K20-J25 K20-J27			K20-J45	K20-J55	K20-J63										
				K20-J47	K20-J57	K20-J65										
				K20-J47	K20-J5701A	K20-J67	K20-J85	K20-J95	K20-C05†							
					K20-J58	K20-J6701A	K20-J87	K20-J9501A								
			K20-J49	K20-J59	K20-J69		K20-J8701A	K20-J97								
							K20-J89	K20-J99								
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box															
	K20-NM15		K20-DM35	K20-DMB45	K20-DMB55											
				K20-DM45	K20-DM55											
			K20-DV47	K20-DV57	K20-DM87	K20-DM87	K20-DM95	K20-DM07	K20-DM905	K20-DM005						
				K20-NR51												
				K20-NR53												
				K20-NMB55												
				K20-NMG57												
		K20-NM35	K20-NM45	K20-NM55	K20-NM65											
		K20-NM37	K20-NM47	K20-NM57	K20-NM67											
		K20-NM39	K20-NM49	K20-NM59	K20-NM69											

†For best results, use with bronze mandrel.

Recommended Stones for K20 and J-K20 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a µm	Approx. R _a µin	Stone to use	Approx. R _a µm	Approx. R _a µin
Deburring: rough holes, all materials						
	K20-A413	—	—	K20-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K20-J57	1,38	55	K20-DM85	1,25	50
Brass, Soft	K20-J63	0,83	33	K20-J63	0,83	33
Bronze	K20-J57	1,38	55	K20-J57	1,38	55
Carbide	K20-DM55	0,50	20	K20-DM55	0,50	20
Cast Iron	K20-J57	0,50	20	K20-DM55	2,00	80
Ceramic	K20-DM55	1,00	40	K20-DM55	1,00	40
Glass	K20-DM55	1,75	70	K20-DM55	1,75	70
Steel, Soft	K20-A57	0,75	30	K20-NM55	1,25	50
Steel, Hardened**	K20-A55	0,30	12	K20-NM55	1,00	40
Steel, Hardened***	K20-A63	0,30	12	—	—	—
Steel, Very Hard***	K20-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	K20-J95	0,30	12	K20-DM05	0,83	33
Brass, Soft	K20-J83	0,40	16	K20-J83	0,40	16
Bronze	K20-J95	0,30	12	K20-J95	0,30	12
Carbide	K20-DM05	0,08	3	K20-DM05	0,08	3
Cast Iron	K20-J95	0,13	5	K20-DM05	0,50	20
Ceramic	K20-DM05	0,38	15	K20-DM05	0,38	15
Glass	K20-DM05	0,38	15	K20-DM05	0,38	15
Steel, Soft	K20-J95	0,10	4	K20-NM05	0,40	16
Steel, Hardened	K20-J83	0,13	5	K20-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

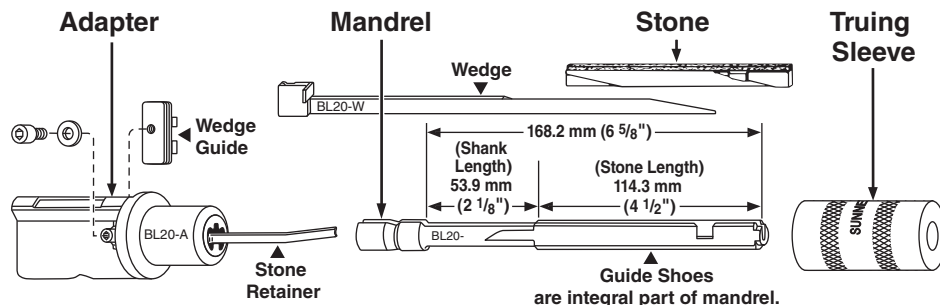
15,62mm - 19,28mm (.615"-.759")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0625	15,88	5/8	15,62	.615	16,10	.634
ASC-0630	16		15,75	.620	16,23	.639
ASC-0641	16,27	41/64	16,03	.631	16,51	.650
ASC-0656	16,67	21/32	16,41	.646	16,89	.665
ASC-0672	17	43/64	16,79	.661	17,27	.680
ASC-0688	17,46	11/16	17,22	.678	17,70	.697
ASC-0703	18	45/64	17,70	.697	18,19	.716
ASC-0719	18,26	23/32	18,01	.709	18,49	.728
ASC-0734	18,65	47/64	18,39	.724	18,87	.743
ASC-0750	19	3/4	18,80	.740	19,28	.759

BL20 Honing Units

Diameter Range:
15,72 mm – 18,90 mm
.619" – .744"



Order 1-5 For Complete BL20 or L20 Honing Units

Diameter Range 15,72 mm - 18,90 mm .619" - .744"		1 BL20 Mandrel Includes wedge					1 L20 Mandrel Includes wedge					2 Truing Sleeve		3 Adapter For L20 mandrels order L20-A adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix					With Extra-Long Shank Choose One Suffix						With stone retainer and wedge guide	For machines with fully adjustable spindle nose					
15,72-16,51	.619-.650	BL20-619A	S	H	B	L20-619A	S	H	B		S-619	BL20-A	C-619	See All Stone Tables At Right					
16,51-17,30	.650-.681	BL20-650A	S	H	B	L20-650A	S	H	B		S-650	BL20-A	C-650						
17,30-18,11	.681-.713	BL20-681A	S	H	B	L20-681A	S	H	B		S-681	BL20-A	C-681						
18,11-18,90	.713-.744	BL20-713A	S	H	B	L20-713A	S	H	B		S-713	BL20-A	C-713						

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel. For very fine finishes and honing exotic metals.*

BL20 Mandrel Replacement Parts

BL20-W Wedge
 Replace when wear **begins** to show
LN-3688A Stone Retainer
LN-3218A Wedge Guide

L20 Mandrel Replacement Parts

L20-W Wedge
 Replace when wear **begins** to show
LN-3692A Stone Retainer
LN-3218A Wedge Guide

Diamond Plated Super Mandrels+

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond. Select appropriate soft steel mandrel and add -D.*

Example: BL20-619AS-D.*

Carbide Shoe Mandrels+

Two types are available for high-production applications... in either Round Carbide Rod Inserted or Full Carbide Shoe Mandrels. In the correct application they last longer than standard hardened mandrels. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Metal Bond Superabrasive Insert Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with either a hardened or carbide shoe mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Single Insert Mandrel

BL20-__AB__JS3X

Double Insert Mandrel

BL20-__AB__KX1X

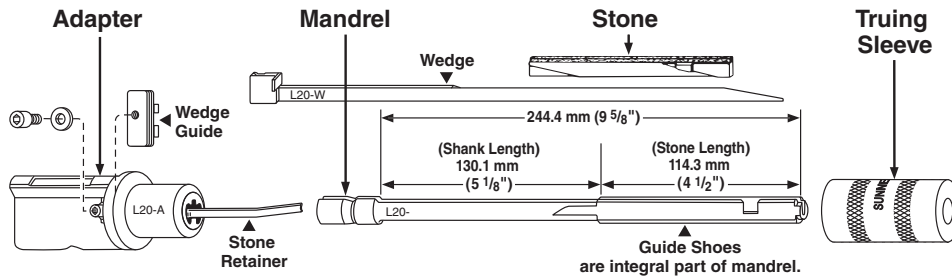
Specify grit size and hardness of insert.

Example: BL20-245AB-NM89-KX1X

* Special Order - Contact Customer Service

L20 Honing Units

Extra-Long Shank



L20 Mandrels are like the BL20 Mandrels except the shanks are 76.2 mm (3") longer.
Use only when the BL20 is too short.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.
Please contact Customer Service or your Sales & Application Engineer.

†For best results, use with bronze mandrel.

Available Stones

	Grit Size											
	70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Aluminum Oxide Stones (A) - 6 per box											
				L20-A43 L20-A45	L20-A55	L20-A61 L20-A63 L20-A65	L20-A75					
				L20-A47	L20-A57 L20-A5701A L20-A59	L20-A67 L20-A69	L20-A77 L20-A79					
Hard-----Soft	Silicon Carbide Stones (J,C) - 6 per box											
				L20-J45	L20-J55	L20-J63 L20-J65		L20-J83 L20-J85	L20-J93 L20-J95	L20-C05†		
				L20-J47	L20-J57	L20-J67		L20-J87	L20-J97			
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vittrified (V) Bond - 1 per box											
			L20-DM35 L20-DMB45		L20-DM55			L20-DM85 L20-DM87		L20-DM05		L20-DR007 L20-DM005
					L20-DV57 L20-NR51 L20-NR53 L20-NMG57			L20-DV87		L20-DV07		
Hard-----Soft			L20-NM35 L20-NM37 L20-NM39	L20-NM45 L20-NM47	L20-NM55 L20-NM57 L20-NM59	L20-NM65 L20-NM67		L20-NM85 L20-NM87	L20-NM95	L20-NM05	L20-NM905	L20-NM005

Recommended Stones for BL20 and L20 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm µin		Stone to use	Approx. R _a Surface Finish µm µin	
Deburring: rough holes, all materials						
	L20-A413	—	—	L20-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L20-J57	1,38	55	L20-DM85	1,25	50
Brass, Soft	L20-J63	0,83	33	L20-J63	0,83	33
Bronze	L20-J57	1,38	55	L20-J57	1,38	55
Carbide	L20-DM55	0,50	20	L20-DM55	0,50	20
Cast Iron	L20-J57	0,50	20	L20-DM55	2,00	80
Ceramic	L20-DM55	1,00	40	L20-DM55	1,00	40
Glass	L20-DM55	1,75	70	L20-DM55	1,75	70
Steel, Soft	L20-A57	0,75	30	L20-NM55	1,25	50
Steel, Hardened*	L20-A55	0,30	12	L20-NM55	1,00	40
Steel, Hardened**	L20-A63	0,30	12	—	—	—
Steel, Very Hard***	L20-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	L20-J95	0,30	12	L20-DM05	0,83	33
Brass, Soft	L20-J83	0,40	16	L20-J83	0,40	16
Bronze	L20-J95	0,30	12	L20-J95	0,30	12
Carbide	L20-DM05	0,08	3	L20-DM05	0,08	3
Cast Iron	L20-J95	0,13	5	L20-DM05	0,50	20
Ceramic	L20-DM05	0,38	15	L20-DM05	0,38	15
Glass	L20-DM05	0,38	15	L20-DM05	0,38	15
Steel, Soft	L20-J95	0,10	4	L20-NM05	0,40	16
Steel, Hardened	L20-J83	0,13	5	L20-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

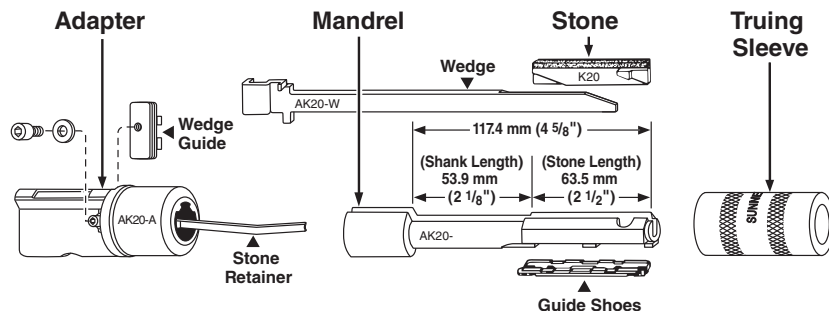
15,62mm - 19,28mm (.615"-.759")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0625	15,88	5/8	15,62	.615	16,10	.634
ASC-0630	16		15,75	.620	16,23	.639
ASC-0641	16,27	41/64	16,03	.631	16,51	.650
ASC-0656	16,67	21/32	16,41	.646	16,89	.665
ASC-0672	17	43/64	16,79	.661	17,27	.680
ASC-0688	17,46	11/16	17,22	.678	17,70	.697
ASC-0703	18	45/64	17,70	.697	18,19	.716
ASC-0719	18,26	23/32	18,01	.709	18,49	.728
ASC-0734	18,65	47/64	18,38	.724	18,87	.743
ASC-0750	19	3/4	18,80	.740	19,28	.759

AK20 Honing Units

Diameter Range:
18,90 mm – 31,75 mm
.744" – 1.250"



Order 1-5 For Complete AK20 or J-AK20 Honing Units

Diameter Range 18,90 mm – 26,19 mm .744" – 1.251"		1 AK/J-AK20 Mandrel Includes Replacement Shim Set LN-1164		2 Truing Sleeve		3 Adapter For JAK20 Mandrel- Order JAK20 Adapter		4 Alignment Bushing†		5 Honing Stone		Replacement Parts			
mm	inches	Choose 1 Prefix				With stone retainer and wedge guide		For machines with fully adjustable spindle nose.				Guide Shoes 1 required, packed 2 per box	Guide Shoe Screws		
												Choose 1 Suffix	Flat Head Brass		
18,90-19,68	.744-.775	AK	JAK	20-744UA	S-744	AK20-A		C-750				UA C B CH	LN-1547A		
19,68-20,47	.775-.806	AK	JAK	20-775UA	S-775	AK20-A		C-750				UA C B CH	4 - 40 x 7/32"		
19,90-20,69	.783-.815	AK	NA	20-20MMUA	S-20MM	AK20-A		C-20MM				UA - - CH			
20,47-21,29	.806-.838	AK	JAK	20-806UB	S-806	AK20-A		C-812				UB C B CH			
21,29-22,07	.838-.869	AK	JAK	20-838UB	S-838	AK20-A		C-812				UB C B CH			
21,90-22,69	.862-.893	AK	NA	20-22MMUB	S-22MM	AK20-A		C-22MM				UB - - CH			
22,07-22,86	.869-.900	AK	JAK	20-869UB	S-869	AK20-A		C-875				UB C B CH	LN-1548A		
22,86-23,65	.900-.931	AK	JAK	20-900UC	S-900	AK20-A		C-875				UC C B CH	4 - 40 x 1/4"		
23,65-24,43	.931-.962	AK	JAK	20-931UC	S-931	AK20-A		C-937				UC C B CH			
23,90-24,69	.940-.972	AK	NA	20-24MMUC	S-24MM	AK20-A		C-24MM				UC - - CH	24MM		
24,43-25,25	.962-.994	AK	JAK	20-962UC	S-962	AK20-A		C-937				UC C B CH			
25,25-26,19	.994-1.031	AK	JAK	20-994UC	S-994	AK20-A		C-1000				UC C B CH			
24,90-25,72	.980-1.012	AK	NA	20-25MMUC	S-25MM	AK20-A		C-25MM				UC - - CH	25MM		
25,15-26,97	.990-1.062	AK	JAK*	20-1000UD	S-994	AK20-A		C-1000				UD - B BH			
26,72-28,57	1.052-1.125	AK	JAK*	20-1062UD	S-1062	AK20-A		C-1062				UD - B BH	LN-1247A		
28,32-30,15	1.115-1.187	AK	JAK*	20-1125UE	S-1125	AK20-A		C-1125				UE - B BH	6 - 32 x 5/16"		
29,90-31,75	1.177-1.250	AK	JAK*	20-1187UE	S-1187	AK20-A		C-1187				UE - B BH			

See All Stone Tables At Right

Mandrel Options

AK = Standard shank. JAK = Extra long shank.

† Alignment Bushings

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Guide Shoe Options

C= SUNALOY® General purpose shoe for most honing applications. Furnished with Mandrel.

B= Bronze for finer finishes and soft or difficult materials. Order separately.

CH/BH= Hard steel for production honing or hard, rough parts or carbide, ceramic, etc. Order separately.

AK20 Mandrel Replacement Parts

K20-W	Wedge
LN-3688A	Stone Retainer
LN-3218A	Wedge Guide

J-AK20 Mandrel Replacement Parts

J-K20-W	Wedge
LN-3704A	Stone Retainer
LN-3218A	Wedge Guide
LN-1164A	Shim Set

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

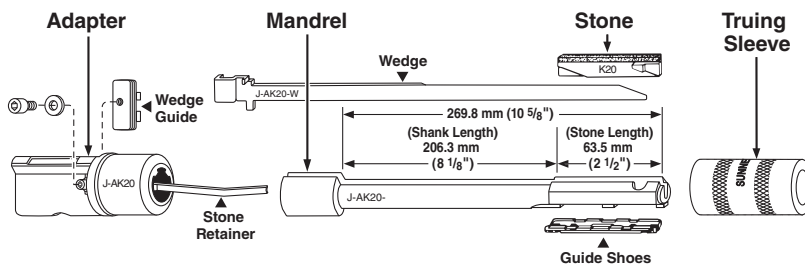
Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Additional Guide Shoes

Carbide Inserted Guide Shoes	Diamond Plated Guide Shoes (120 Grit)	Metal Bond Superabrasive Inserted Guide Shoes
	Specify part finish diameter when ordering	Specify abrasive type, grit size, and hardness.
UA-B-TX	UA-B- -DX	UA-B- -JS2X
UB-B-TX	UB-B- -DX	UB-B- -JS2X
UC-B-TX	UC-B- -DX	UC-B- -JS2X
UD-B-TX	UD-B- -DX	UD-B- -JS2X
UE-B-TX	UE-B- -DX	UE-B- -JS2X

Ex: UA-B-750-DX Ex: UA-B-NM89-JS2X (1 required—packed 1 per box).

+ Special Order - Contact Customer Service



J-K20 Mandrels are similar to the K20 Mandrels except the shanks are 152.4 mm (6") longer and should be used only when counterbores will not allow holes to be honed properly with standard K20 Mandrels.

J-AK20 Honing Units

Extra-Long
Shank

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

†For best results, use with bronze guide shoes.

Available Stones

		Grit Size												
		70	80	100	150	220	280	320	400	500	600	900	1200	
Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box													
		K20-A27		K20-A43 K20-A45 K20-A47	K20-A53 K20-A55 K20-A57 K20-A5701A	K20-A61 K20-A63 K20-A65 K20-A67	K20-A75 K20-A77							
				K20-A49 K20-A411 K20-A413	K20-A58 K20-A59	K20-A68 K20-A69	K20-A79							
Hard-----Soft	Silicon Carbide Stones (J,C) - 12 per box													
		K20-J25 K20-J27		K20-J45 K20-J47	K20-J55 K20-J57 K20-J5701A K20-J58 K20-J59	K20-J63 K20-J65 K20-J67 K20-J6701A K20-J69		K20-J83 K20-J85 K20-J87 K20-J8701A K20-J89	K20-J93 K20-J95 K20-J9501A K20-J97 K20-J99	K20-C05†				
				K20-J49										
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box													
	K20-NM15		K20-DM35	K20-DMB45 K20-DM45 K20-DV47	K20-DMB55 K20-DM55 K20-DM57 K20-DV57 K20-NR51 K20-NR53 K20-NMB55 K20-NMG57	K20-NM65 K20-NM67 K20-NM69		K20-DM85 K20-DM87 K20-DV87 K20-NR83 K20-NMG85 K20-NM85 K20-NM87 K20-NM89	K20-DM95 K20-NM95 K20-NM97	K20-DM05 K20-DM07 K20-DV07	K20-DM905	K20-DM005	K20-DR007	
			K20-NM35 K20-NM37 K20-NM39	K20-NM45 K20-NM47 K20-NM49	K20-NM55 K20-NM57 K20-NM59						K20-NM005			

Recommended Stones for K20 and J-AK20 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	K20-A413	—	—	K20-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	K20-J57	1,38	55	K20-DM85	1,25	50
Brass, Soft	K20-J63	0,83	33	K20-J63	0,83	33
Bronze	K20-J57	1,38	55	K20-J57	1,38	55
Carbide	K20-DM55	0,50	20	K20-DM55	0,50	20
Cast Iron	K20-J57	0,50	20	K20-DM55	2,00	80
Ceramic	K20-DM55	1,00	40	K20-DM55	1,00	40
Glass	K20-DM55	1,75	70	K20-DM55	1,75	70
Steel, Soft	K20-A57	0,75	30	K20-NM55	1,25	50
Steel, Hardened*	K20-A55	0,30	12	K20-NM55	1,00	40
Steel, Hardened**	K20-A63	0,30	12	—	—	—
Steel, Very Hard***	K20-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	K20-J95	0,30	12	K20-DM05	0,83	33
Brass, Soft	K20-J83	0,40	16	K20-J83	0,40	16
Bronze	K20-J95	0,30	12	K20-J95	0,30	12
Carbide	K20-DM05	0,08	3	K20-DM05	0,08	3
Cast Iron	K20-J95	0,13	5	K20-DM05	0,50	20
Ceramic	K20-DM05	0,38	15	K20-DM05	0,38	15
Glass	K20-DM05	0,38	15	K20-DM05	0,38	15
Steel, Soft	K20-J95	0,10	4	K20-NM05	0,40	16
Steel, Hardened	K20-J83	0,13	5	K20-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

18,90mm -31,75mm (.744"-1.250")

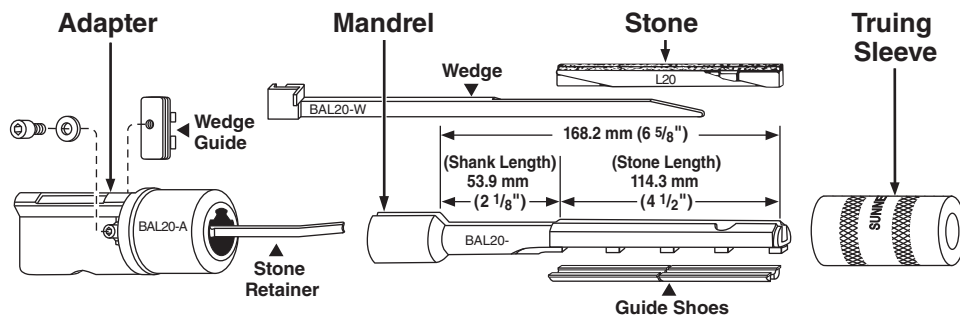
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter	Diameter Range			
		Low		High	
mm	in	mm	in	mm	in
ASC-0750	19 3/4	18,80	.740	19,28	.759
ASC-0766	19,45 49/64	19,20	.756	19,69	.775
ASC-0781	20 25/32	19,69	.775	20,17	.794
ASC-0797	20,24 51/64	19,99	.787	20,47	.806
ASC-0812	20,64 13/16	20,37	.802	20,85	.821
ASC-0828	21 53/64	20,78	.818	21,26	.837
ASC-0844	21,43 27/32	21,18	.834	21,67	.853
ASC-0859	22 55/64	21,67	.853	22,15	.872
ASC-0875	22,22 7/8	21,97	.865	22,45	.884
ASC-0891	22,62 57/64	22,38	.881	22,86	.900
ASC-0906	23 29/32	22,76	.896	23,24	.915
ASC-0922	23,42 59/64	23,17	.912	23,65	.931
ASC-0938	24 15/16	23,67	.932	24,16	.951
ASC-0953	24,21 61/64	23,95	.943	24,44	.962
ASC-0969	24,61 31/32	24,36	.959	24,84	.978
ASC-0984	25 63/64	24,69	.972	25,17	.991
ASC-1000	25,40 1	25,15	.990	25,63	1.010
ASC-1016	26 1-1/64	25,68	1.011	26,16	1.030
ASC-51†	—	26,00	1.000	32,00	1.250

†Requires the use of ASC-50 Setting Fixture. Specify ASC-50M for metric version.

BAL20 Honing Units

Diameter Range:
18,90 mm – 26,19 mm
.744" – 1.031"



Order 1-5 For Complete BAL20 or AL20 Honing Units

Diameter Range 18,90 mm - 26,19 mm .744" - 1.031"		1 AL/BAL20 Mandrel Includes wedge and SUNALOY® guide shoes		2 Truing Sleeve		3 Adapter For AL20 mandrels Order AL20-A adapter		4 Alignment Bushing ⁺ For machines with fully adjustable spindle nose.		5 Honing Stone		Replacement Parts	
mm	inches	Choose 1 Prefix				Includes stone retainer and wedge guide						Guide Shoes 1 required, packed 2 per box Choose 1 Suffix	Guide Shoe Screws Flat Head Brass
18,90-19,68	.744-.775	BAL	AL	20-744LA	S-744	BAL20-A		C-713		See All Stone Tables At Right		LA C B CH	LN-1547A
19,68-20,47	.775-.806	BAL	AL	20-775LA	S-775	BAL20-A		C-750				LA C B CH	4 - 40 x 7/32"
20,47-21,29	.806-.838	BAL	AL	20-806LB	S-806	BAL20-A		C-812				LB C B CH	
21,29-22,07	.838-.869	BAL	AL	20-838LB	S-838	BAL20-A		C-875				LB C B CH	
22,07-22,86	.869-.900	BAL	AL	20-869LB	S-869	BAL20-A		C-875				LB C B CH	
22,86-23,65	.900-.931	BAL	AL	20-900LC	S-900	BAL20-A		C-875				LC C B CH	LN-1548A
23,65-24,43	.931-.962	BAL	AL	20-931LC	S-931	BAL20-A		C-937				LC C B CH	4 - 40 x 1/4"
24,43-25,25	.962-.994	BAL	AL	20-962LC	S-962	BAL20-A		C-937				LC C B CH	
25,25-26,19	.994-1.031	BAL	AL	20-994LC	S-994	BAL20-A		C-1000				LC C B CH	

Mandrel Options

BAL = Standard shank. AL = Extra long shank.

Alignment Bushings

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Guide Shoe Options

C= SUNALOY® General purpose shoe for most honing applications. Furnished with Mandrel.

B= Bronze for finer finishes and soft or difficult materials. Order separately.

CH= Hard steel for production honing or hard, rough parts or carbide, ceramic, etc. Order separately.

BAL20 Mandrel Replacement Parts

BL20-W Wedge
Replace when wear *begins* to show

LN-3688A Stone Retainer
LN-3218A Wedge Guide

AL20 Mandrel Replacement Parts

L20-W Wedge
Replace when wear *begins* to show

LN-3692A Stone Retainer
LN-3218A Wedge Guide

Extended Shank Mandrels⁺

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels⁺

Sunnen Honing Units can be used to size two or more "in-line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

Additional Guide Shoes

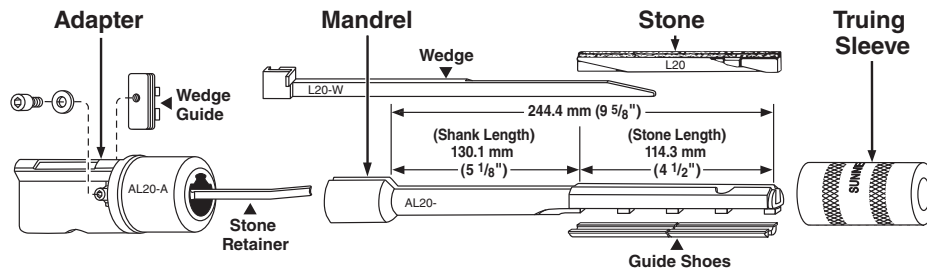
Carbide Inserted Guide Shoes	Diamond Plated Guide Shoes (120 Grit)	Metal Bond Superabrasive Inserted Guide Shoes
	Specify part finish diameter when ordering	Specify abrasive type, grit size, and hardness.
LA-B-TX	LA-B-____-DX	LA-B-____-JS2X
LB-B-TX	LB-B-____-DX	LB-B-____-JS2X
LC-B-TX	LC-B-____-DX	LC-B-____-JS2X

Ex: LA-B-744-DX Ex: LA-B-NM89-JS2X (2 required—packed 1 per box).

⁺ Special Order - Contact Customer Service

AL20 Honing Units

Extra-Long Shank



AL20 Mandrels are like BAL20 Mandrels except the shanks are 76.2 mm (3") longer.
Use only when BAL20 is too short.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

†For best results, use with bronze mandrel.

Available Stones

	Grit Size											
	70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Aluminum Oxide Stones (A) - 6 per box											
				L20-A43 L20-A45	L20-A55	L20-A61 L20-A63 L20-A65	L20-A75					
				L20-A47 L20-A49 L20-A411 L20-A413	L20-A57 L20-A5701A L20-A59	L20-A67 L20-A69	L20-A77 L20-A79					
Hard-----Soft	Silicon Carbide Stones (J,C) - 6 per box											
				L20-J45	L20-J55	L20-J63 L20-J65		L20-J83 L20-J85	L20-J93 L20-J95	L20-C05†		
				L20-J47 L20-J49	L20-J57 L20-J59	L20-J67 L20-J69		L20-J87 L20-J89	L20-J97 L20-J99			
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box											
		L20-DM35 L20-DMB45		L20-DM55				L20-DM85 L20-DM87		L20-DM05		L20-DR007 L20-DM005
		L20-NM35 L20-NM37 L20-NM39	L20-NM45 L20-NM47	L20-NM55 L20-NM57 L20-NM59	L20-NM65 L20-NM67			L20-NR83	L20-NM95	L20-NM05	L20-NM905	L20-NM005

Recommended Stones for BL20 and L20 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra µm	Approx. Ra µin	Stone to use	Approx. Ra µm	Approx. Ra µin
Deburring: rough holes, all materials						
	L20-A413	—	—	L20-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	L20-J57	1,38	55	L20-DM85	1,25	50
Brass, Soft	L20-J63	0,83	33	L20-J63	0,83	33
Bronze	L20-J57	1,38	55	L20-J57	1,38	55
Carbide	L20-DM55	0,50	20	L20-DM55	0,50	20
Cast Iron	L20-J57	0,50	20	L20-DM55	2,00	80
Ceramic	L20-DM55	1,00	40	L20-DM55	1,00	40
Glass	L20-DM55	1,75	70	L20-DM55	1,75	70
Steel, Soft	L20-A57	0,75	30	L20-NM55	1,25	50
Steel, Hardened*	L20-A55	0,30	12	L20-NM55	1,00	40
Steel, Hardened**	L20-A63	0,30	12	—	—	—
Steel, Very Hard***	L20-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	L20-J95	0,30	12	L20-DM05	0,83	33
Brass, Soft	L20-J83	0,40	16	L20-J83	0,40	16
Bronze	L20-J95	0,30	12	L20-J95	0,30	12
Carbide	L20-DM05	0,08	3	L20-DM05	0,08	3
Cast Iron	L20-J95	0,13	5	L20-DM05	0,50	20
Ceramic	L20-DM05	0,38	15	L20-DM05	0,38	15
Glass	L20-DM05	0,38	15	L20-DM05	0,38	15
Steel, Soft	L20-J95	0,10	4	L20-NM05	0,40	16
Steel, Hardened	L20-J83	0,13	5	L20-NM05	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Automatic Size Control Probes

18,90mm - 31,75mm (.744"-1.250")

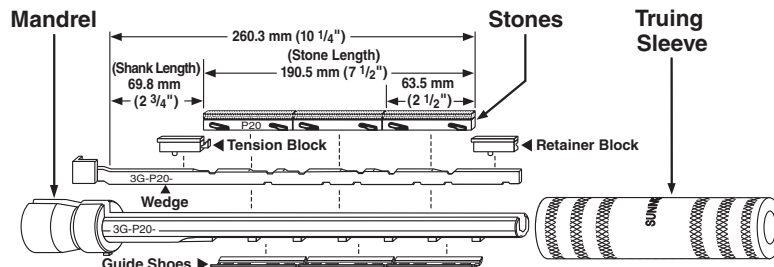
For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low		High	
	mm	in	mm	in	mm	in
ASC-0750	19	3/4	18,80	.740	19,28	.759
ASC-0766	19,45	49/64	19,20	.756	19,69	.775
ASC-0781	20	25/32	19,69	.775	20,17	.794
ASC-0797	20,24	51/64	19,99	.787	20,47	.806
ASC-0812	20,64	13/16	20,37	.802	20,85	.821
ASC-0828	21	53/64	20,78	.818	21,26	.837
ASC-0844	21,43	27/32	21,18	.834	21,67	.853
ASC-0859	22	55/64	21,67	.853	22,15	.872
ASC-0875	22,22	7/8	21,97	.865	22,45	.884
ASC-0891	22,62	57/64	22,38	.881	22,86	.900
ASC-0906	23	29/32	22,76	.896	23,24	.915
ASC-0922	23,42	59/64	23,17	.912	23,65	.931
ASC-0938	24	15/16	23,67	.932	24,16	.951
ASC-0953	24,21	61/64	23,95	.943	24,44	.962
ASC-0969	24,61	31/32	24,36	.959	24,84	.978
ASC-0984	25	63/64	24,69	.972	25,17	.991
ASC-1000	25,40	1	25,15	.990	25,63	1.010
ASC-1016	26	1-1/64	25,68	1.011	26,16	1.030

P20

3-Stone Honing Units

Diameter Range:
15,72 mm – 25,40 mm
.619" – 1.000"



NOTE: Mandrels can be used with fewer than 3 stones for shorter parts which require long reach.

NOTE: These honing units cannot be used for blind hole honing.

Order 1-4 For Complete 3-Stone P20 Honing Units

Diameter Range 15,72 mm - 25,40 mm .619" - 1.000"		1 P20 Mandrel Includes wedge, retainer block, tension block, and SUNALOY® guide shoes	2 Truing Sleeve	3 Alignment Bushing†	4 Honing Stone 3 required	Replacement Parts	
mm	inches			For machines with fully adjustable spindle nose		Guide Shoes 3 required, packed 2 per box Choose 1 Suffix	Guide Shoe Screws Flat Head Brass
15,72-16,66	.619-.656	3G-P20-625AS†*	ST-625	C-625	See All Stone Tables Page 2.45	Not Replaceable	
16,51-17,45	.650-.687	3G-P20-656AS†*	ST-656	C-650		Not Replaceable	
17,30-18,24	.681-.718	3G-P20-687AS†*	ST-687	C-681		Not Replaceable	
18,11-19,05	.713-.750	3G-P20-718AS†*	ST-718	C-713		Not Replaceable	
18,90-19,84	.744-.781	3G-P20-750UA†	ST-750	C-750		UA C B CH	LN-1547A 4 - 40 x 7/32"
19,68-20,62	.775-.812	3G-P20-781UA†	ST-780	C-812		UA C B CH	LN-1548A 4 - 40 x 1/4"
20,47-21,41	.806-.843	3G-P20-812UB†	ST-812	C-812		UB C B CH	
21,29-22,22	.838-.875	3G-P20-843UB†	ST-840	C-812		UB C B CH	
22,07-23,01	.869-.906	3G-P20-875UB†	ST-875	C-875		UB C B CH	
22,86-23,80	.900-.937	3G-P20-906UC†	ST-900	C-875		UC C B CH	
23,65-24,59	.931-.968	3G-P20-937UC†	ST-937	C-937		UC C B CH	
24,43-25,40	.962-1.000	3G-P20-968UC†	ST-960	C-937		UC C B CH	

Mandrel Options

† Requires the use of LN-570A Concentric Sleeve
* Shoes are soft steel, integral with mandrel.

‡ Alignment Bushings

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Guide Shoe Options

C= SUNALOY® General purpose shoe for most honing applications. Furnished with Mandrel.
B= Bronze for finer finishes and soft or difficult materials. Order separately.
CH= Hard steel for production honing or hard, rough parts or carbide, ceramic, etc. Order separately.

Additional Guide Shoes†

Carbide Inserted Guide Shoes	Diamond Plated Guide Shoes (120 Grit)	Metal Bond Superabrasive Inserted Guide Shoes
	Specify part finish diameter when ordering	Specify abrasive type, grit size, and hardness.
UA-B-TX†	UA-B- -DX†	UA-B- -JS2X†
UB-B-TX†	UB-B- -DX†	UB-B- -JS2X†
UC-B-TX†	UC-B- -DX†	UC-B- -JS2X†

Ex: UA-B-750-DX Ex: UA-B-NM89-JS2X (1 required—packed 1 per box).

P20 Mandrel Replacement Parts

3G-P20	Wedge
LN-1529A	Replace when wear <i>begins</i> to show
LN-1533A	Retainer Block with set screw
LN-1545A	Tension Block
	Set Screw only (Pkg. of 2)

Diamond Plated Super Mandrels†

Diamond plated, superabrasive stone inserted, or carbide guide shoe mandrel are available for situations where a longer life shoe is needed.

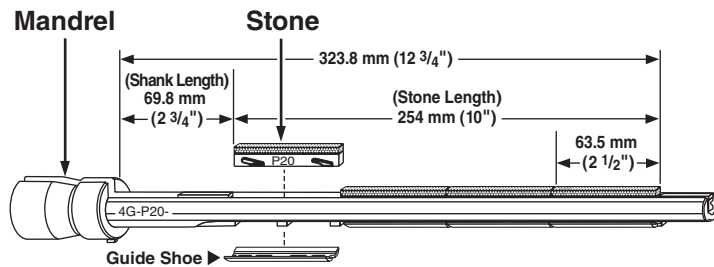
Automatic Size Control Probes

15,62mm - 25,63mm (.615"-1.010")

For use on machines with Automatic Size Control units. Select the appropriate size control probe based on workpiece finish diameter. See page 8.4 for complete list.

Sensing Tip Part No.	Nominal Diameter mm in	Diameter Range Low mm in High mm in	Sensing Tip Part No.	Nominal Diameter mm in	Diameter Range Low mm in High mm in
ASC-0625	15,88 5/8	15,62 .615 16,10 .634	ASC-0812	20,64 13/16	20,37 .802 20,85 .821
ASC-0630	16 -	15,75 .620 16,23 .639	ASC-0828	21 53/64	20,78 .818 21,26 .837
ASC-0641	16,27 41/64	16,03 .631 16,51 .650	ASC-0844	21,43 27/32	21,18 .834 21,67 .853
ASC-0656	16,67 21/32	16,41 .646 16,89 .665	ASC-0859	22 55/64	21,67 .853 22,15 .872
ASC-0672	17 43/64	16,79 .661 17,27 .680	ASC-0875	22,22 7/8	21,97 .865 22,45 .884
ASC-0688	17,46 11/16	17,22 .678 17,70 .697	ASC-0891	22,62 57/64	22,38 .881 22,86 .900
ASC-0703	18 45/64	17,70 .697 18,19 .716	ASC-0906	23 29/32	22,76 .896 23,24 .915
ASC-0719	18,26 23/32	18,01 .709 18,49 .728	ASC-0922	23,42 59/64	23,17 .912 23,65 .931
ASC-0734	18,65 47/64	18,39 .724 18,87 .743	ASC-0938	24 15/16	23,67 .932 24,16 .951
ASC-0750	19 3/4	18,80 .740 19,28 .759	ASC-0953	24,21 61/64	23,95 .943 24,44 .962
ASC-0766	19,45 49/64	19,20 .756 19,69 .775	ASC-0969	24,61 31/32	24,36 .959 24,84 .978
ASC-0781	20 25/32	19,69 .775 20,17 .794	ASC-0984	25 63/64	24,69 .972 25,17 .991
ASC-0797	20,24 51/64	19,99 .787 20,47 .806	ASC-1000	25,40 1	25,15 .990 25,63 1.010

† Special Order - Contact Customer Service



NOTE: Mandrels can be used with fewer than 4 stones for shorter parts which require long reach.

NOTE: These honing units cannot be used for blind hole honing.

P20

4-Stone Honing Units

Diameter Range:
15,72 mm – 25,40 mm
.619" – 1.000"

Order 1-4 For Complete 4-Stone P20 Honing Units

Diameter Range 15,72 mm - 25,40 mm .619" - 1.000"		1 P20 Mandrel Includes wedge, retainer block, tension block, and SUNALOY® guide shoes	2 Truing Sleeve	3 Alignment Bushing†	4 Honing Stone 4 required	Replacement Parts	
mm	inches			For machines with fully adjustable spindle nose		Guide Shoes 4 required, packed 2 per box Choose 1 Suffix	Guide Shoe Screws Flat Head Brass
15,72-16,66	.619-.656	4G-P20-625AS†*	ST-625	C-625	See All Stone Tables Page 2.45	Not Replaceable	
16,51-17,45	.650-.687	4G-P20-656AS†*	ST-656	C-650		Not Replaceable	
17,30-18,24	.681-.718	4G-P20-687AS†*	ST-687	C-681		Not Replaceable	
18,11-19,05	.713-.750	4G-P20-718AS†*	ST-718	C-713		Not Replaceable	
18,90-19,84	.744-.781	4G-P20-750UA†	ST-750	C-750		UA C B CH	LN-1547A 4 - 40 x 7/32"
19,68-20,62	.775-.812	4G-P20-781UA†	ST-780	C-812		UB C B CH	LN-1548A 4 - 40 x 1/4"
20,47-21,41	.806-.843	4G-P20-812UB†	ST-812	C-812		UB C B CH	
21,29-22,22	.838-.875	4G-P20-843UB†	ST-840	C-812		UB C B CH	
22,07-23,01	.869-.906	4G-P20-875UB†	ST-875	C-875		UB C B CH	
22,86-23,80	.900-.937	4G-P20-906UC†	ST-900	C-875		UC C B CH	
23,65-24,59	.931-.968	4G-P20-937UC†	ST-937	C-937		UC C B CH	
24,43-25,40	.962-1.000	4G-P20-968UC†	ST-960	C-937		UC C B CH	

Mandrel Options

† Requires the use of LN-570A Concentric Sleeve
* Shoes are soft steel, integral with mandrel.

‡ Alignment Bushings

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Guide Shoe Options

C= SUNALOY® General purpose shoe for most honing applications. Furnished with Mandrel.
B= Bronze for finer finishes and soft or difficult materials. Order separately.
CH= Hard steel for production honing or hard, rough parts or carbide, ceramic, etc. Order separately.

Additional Guide Shoes†

Carbide Inserted Guide Shoes	Diamond Plated Guide Shoes (120 Grit)	Metal Bond Superabrasive Inserted Guide Shoes
	Specify part finish, diameter when ordering	Specify abrasive type, grit size, and hardness.
UA-B-TX†	UA-B- -DX†	UA-B- -JS2X†
UB-B-TX†	UB-B- -DX†	UB-B- -JS2X†
UC-B-TX†	UC-B- -DX†	UC-B- -JS2X†

Ex: UA-B-750-DX Ex: UA-B-NM89-JS2X (4 required—packed 1 per box).

P20 Mandrel Replacement Parts

4G-P20	Wedge
LN-1529A	Replace when wear <i>begins</i> to show
LN-1533A	Retainer Block with set screw
LN-1545A	Tension Block
	Set Screw only (Pkg. of 2)

Diamond Plated Super Mandrels†

Diamond plated, superabrasive stone inserted, or carbide guide shoe mandrel are available for situations where a longer life shoe is needed.

Automatic Size Control Probes

15,62mm - 25,63mm (.615"-1.010")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list.

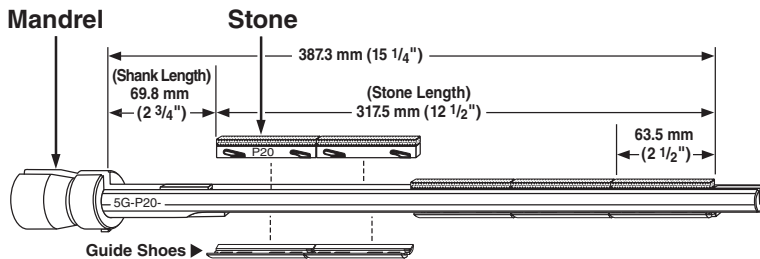
Sensing Tip Part No.	Nominal Diameter mm in	Diameter Range Low High mm in mm in
ASC-0625	15,88 5/8	15,62 .615 16,10 .634
ASC-0630	16 —	15,75 .620 16,23 .639
ASC-0641	16,27 41/64	16,03 .631 16,51 .650
ASC-0656	16,67 21/32	16,41 .646 16,89 .665
ASC-0672	17 43/64	16,79 .661 17,27 .680
ASC-0688	17,46 11/16	17,22 .678 17,70 .697
ASC-0703	18 45/64	17,70 .697 18,19 .716
ASC-0719	18,26 23/32	18,01 .709 18,49 .728
ASC-0734	18,65 47/64	18,39 .724 18,87 .743
ASC-0750	19 3/4	18,80 .740 19,28 .759
ASC-0766	19,45 49/64	19,20 .756 19,69 .775
ASC-0781	20 25/32	19,69 .775 20,17 .794
ASC-0797	20,24 51/64	19,99 .787 20,47 .806
ASC-0812	20,64 13/16	20,37 .802 20,85 .821
ASC-0828	21 53/64	20,78 .818 21,26 .837
ASC-0844	21,43 27/32	21,18 .834 21,67 .853
ASC-0859	22 55/64	21,67 .853 22,15 .872
ASC-0875	22,22 7/8	21,97 .865 22,45 .884
ASC-0891	22,62 57/64	22,38 .881 22,86 .900
ASC-0906	23 29/32	22,76 .896 23,24 .915
ASC-0922	23,42 59/64	23,17 .912 23,65 .931
ASC-0938	24 15/16	23,67 .932 24,16 .951
ASC-0953	24,21 61/64	23,95 .943 24,44 .962
ASC-0969	24,61 31/32	24,36 .959 24,84 .978
ASC-0984	25 63/64	24,69 .972 25,17 .991
ASC-1000	25,40 1	25,15 .990 25,63 1.010

† Special Order - Contact Customer Service

P20

5-Stone Honing Units

Diameter Range:
15,72 mm – 25,40 mm
.619" – 1.000"



NOTE: Mandrels can be used with fewer than 5 stones for shorter parts which require long reach.

NOTE: These honing units cannot be used for blind hole honing.

Order 1-4 For Complete 5-Stone P20 Honing Units

Diameter Range 15,72 mm - 25,40 mm .619" - 1.000"		1 P20 Mandrel Includes wedge, retainer block, tension block, and SUNALOV® guide shoes	2 Truing Sleeve	3 Alignment Bushing† For machines with fully adjustable spindle nose.	4 Honing Stone 5 required	Replacement Parts	
mm	inches					Guide Shoes 1 required, packed 2 per box Choose 1 Suffix	Guide Shoe Screws Flat Head Brass
15,72-16,66	.619-.656	5G-P20-625AS†*	ST-625	C-625	See All Stone Tables At Right	Not Replaceable	
16,51-17,45	.650-.687	5G-P20-656AS†*	ST-656	C-650		Not Replaceable	
17,30-18,24	.681-.718	5G-P20-687AS†*	ST-687	C-681		Not Replaceable	
18,11-19,05	.713-.750	5G-P20-718AS†*	ST-718	C-713		Not Replaceable	
18,90-19,84	.744-.781	5G-P20-750UA†	ST-750	C-750		UA C B CH	LN-1547A
19,68-20,62	.775-.812	5G-P20-781UA†	ST-780	C-812		UA C B CH	4 - 40 x 7/32"
20,47-21,41	.806-.843	5G-P20-812UB†	ST-812	C-812		UB C B CH	LN-1548A 4 - 40 x 1/4"
21,29-22,22	.838-.875	5G-P20-843UB†	ST-840	C-812		UB C B CH	
22,07-23,01	.869-.906	5G-P20-875UB†	ST-875	C-875		UB C B CH	
22,86-23,80	.900-.937	5G-P20-906UC†	ST-900	C-875		UC C B CH	
23,65-24,59	.931-.968	5G-P20-937UC†	ST-937	C-937		UC C B CH	
24,43-25,40	.962-1.000	5G-P20-968UC†	ST-960	C-937		UC C B CH	

Mandrel Options

† Requires the use of LN-570A Concentric Sleeve
* Shoes are soft steel, integral with mandrel.

† Alignment Bushings

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Guide Shoe Options

C= SUNALOV® General purpose shoe for most honing applications. Furnished with Mandrel.
B= Bronze for finer finishes and soft or difficult materials. Order separately.
CH= Hard steel for production honing or hard, rough parts or carbide, ceramic, etc. Order separately.

Additional Guide Shoes†

Carbide Inserted Guide Shoes	Diamond Plated Guide Shoes (120 Grit)	Metal Bond Superabrasive Inserted Guide Shoes
	Specify part finish diameter when ordering	Specify abrasive type, grit size, and hardness.
UA-B-TX†	UA-B- -DX†	UA-B- -JS2X†
UB-B-TX†	UB-B- -DX†	UB-B- -JS2X†
UC-B-TX†	UC-B- -DX†	UC-B- -JS2X†

Ex: UA-B-750-DX Ex: UA-B-NM89-JS2X (1 required—packed 1 per box).

P20 Mandrel Replacement Parts

5G-P20	Wedge
LN-1529A	Replace when wear <i>begins</i> to show
LN-1533A	Retainer Block with set screw
LN-1545A	Tension Block
	Set Screw only (Pkg. of 2)

Extended Length P20 Mandrels

Available on a special order basis.

Diamond Plated Super Mandrels†

Diamond plated, superabrasive stone inserted, or carbide guide shoe mandrel are available for situations where a longer life shoe is needed.

Automatic Size Control Probes

15,62mm - 25,63mm (.615"-1.010")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list.

Sensing Tip Part No.	Nominal Diameter		Diameter Range				Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in		mm	in	Low mm	in	High mm	in
ASC-0625	15,88	5/8	15,62	.615	16,10	.634	ASC-0812	20,64	13/16	20,37	.802	20,85	.821
ASC-0630	16	—	15,75	.620	16,23	.639	ASC-0828	21	53/64	20,78	.818	21,26	.837
ASC-0641	16,27	41/64	16,03	.631	16,51	.650	ASC-0844	21,43	27/32	21,18	.834	21,67	.853
ASC-0656	16,67	21/32	16,41	.646	16,89	.665	ASC-0859	22	55/64	21,67	.853	22,15	.872
ASC-0672	17	43/64	16,79	.661	17,27	.680	ASC-0875	22,22	7/8	21,97	.865	22,45	.884
ASC-0688	17,46	11/16	17,22	.678	17,70	.697	ASC-0891	22,62	57/64	22,38	.881	22,86	.900
ASC-0703	18	45/64	17,70	.697	18,19	.716	ASC-0906	23	29/32	22,76	.896	23,24	.915
ASC-0719	18,26	23/32	18,01	.709	18,49	.728	ASC-0922	23,42	59/64	23,17	.912	23,65	.931
ASC-0734	18,65	47/64	18,39	.724	18,87	.743	ASC-0938	24	15/16	23,67	.932	24,16	.951
ASC-0750	19	3/4	18,80	.740	19,28	.759	ASC-0953	24,21	61/64	23,95	.943	24,44	.962
ASC-0766	19,45	49/64	19,20	.756	19,69	.775	ASC-0969	24,61	31/32	24,36	.959	24,84	.978
ASC-0781	20	25/32	19,69	.775	20,17	.794	ASC-0984	25	63/64	24,69	.972	25,17	.991
ASC-0797	20,24	51/64	19,99	.787	20,47	.806	ASC-1000	25,40	1	25,15	.990	25,63	1.010

† Special Order - Contact Customer Service

P20

Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

†For best results, use with bronze guide shoes.

Available Stones

Available Stones													
Grit Size													
70 80 100 150 220 280 320 400 500 600 900 1200													
Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box												
	P20-A27			P20-A43 P20-A45	P20-A55	P20-A63 P20-A65							
				P20-A47	P20-A57	P20-A67							P20-A77
				P20-A49 P20-A411 P20-A413	P20-A59	P20-A69							
Hard-----Soft	Silicon Carbide Stones (J,C) - 12 per box												
	P20-J25			P20-J45	P20-J55	P20-J63 P20-J65		P20-J83 P20-J85	P20-J95	P20-C05†			
				P20-J47	P20-J57	P20-J67		P20-J87	P20-J97				
				P20-J49		P20-J69		P20-J89	P20-J99				
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box												
		P20-DM35	P20-DMB45	P20-DM55				P20-DM85		P20-DM05			
				P20-DV57				P20-DV87		P20-DV07			
				P20-NR53 P20-NMG57				P20-NR83					
				P20-NM35 P20-NM37				P20-NM45		P20-NM55 P20-NM57			P20-NM85

Recommended Stones for P20 Mandrels

Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin	Stone to use	Approx. Ra Surface Finish μm	Approx. Ra Surface Finish μin
Deburring: rough holes, all materials						
	P20-A413	—	—	P20-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	P20-J57	1,38	55	P20-DM85	1,25	50
Brass, Soft	P20-J63	0,83	33	P20-J63	0,83	33
Bronze	P20-J57	1,38	55	P20-J57	1,38	55
Carbide	P20-DM55	0,50	20	P20-DM55	0,50	20
Cast Iron	P20-J57	0,50	20	P20-DM55	2,00	80
Ceramic	P20-DM55	1,00	40	P20-DM55	1,00	40
Glass	P20-DM55	1,75	70	P20-DM55	1,75	70
Steel, Soft	P20-A57	0,75	30	P20-NM55	1,25	50
Steel, Hardened*	P20-A55	0,30	12	P20-NM55	1,00	40
Steel, Hardened**	P20-A63	0,30	12	—	—	—
Steel, Very Hard***	P20-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	P20-J95	0,30	12	P20-DM05	0,83	33
Brass, Soft	P20-J83	0,40	16	P20-J83	0,40	16
Bronze	P20-J95	0,30	12	P20-J95	0,30	12
Carbide	P20-DM05	0,08	3	P20-DM05	0,08	3
Cast Iron	P20-J95	0,13	5	P20-DM05	0,50	20
Ceramic	P20-DM05	0,38	15	P20-DM05	0,38	15
Glass	P20-DM05	0,38	15	P20-DM05	0,38	15
Steel, Soft	P20-J95	0,10	4	P20-NM05	0,40	16
Steel, Hardened	P20-J83	0,13	5	P20-NM05	0,18	7

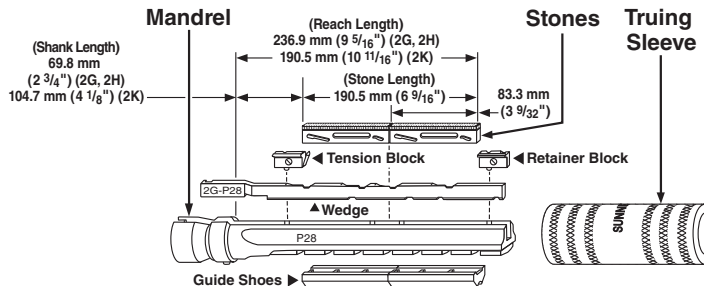
* 1st choice
 ** 2nd choice. Use if A55 does not cut.
 *** 3rd choice. Use if A63 does not cut.



P28

2-Stone Honing Units

Diameter Range:
25,15 mm – 152,40 mm
.990" – 6"



NOTE: Mandrels can be used with one stone for shorter parts which require long reach.

Open Hole: Order 1, 2, 5 For Complete P28 2-Stone Honing Units
Blind Hole: Order 1, 2, 4, 6 For Complete P28 2-Stone Honing Units

Diameter Range 25,15 mm - 152,40 mm .990" - 6"		1 P28 Mandrel Assembled for open hole work. Includes Wedge and Guide Shoes	2 Truing Sleeve	3 Replacement Guide Shoes 2 required SC and SD Guide Shoes Order 2 Guide Shoes per number of stones used	4 Wedge Blind Hole Replace When Wear Begins To Show	Honing Stone				
mm	inches			Sunaloy	Zinc	Bronze	Hard Steel	Diamond Plated		
25,15-26,97	.990-1.062	2G-P28-1000VA†	ST-1000	VA-C\$		VA-B	VA-CH	VA-BD	2G-R28	5 Open Hole See P28 Open Hole Table on Page 2.50.
26,72-28,58	1.052-1.125	2G-P28-1062VA†	ST-1062	VA-C\$		VA-B	VA-CH	VA-BD	2G-R28	
28,32-30,15	1.115-1.187	2G-P28-1125VB†	ST-1125	VB-C\$		VB-B	VB-CH	VB-BD	2G-R28	
29,90-31,75	1.177-1.250	2G-P28-1187VB†	ST-1187	VB-C\$		VB-B	VB-CH	VB-BD	2G-R28	
31,24-34,93	1.230-1.375	2G-P28-1250WB†	ST-1250		WB-D\$	WB-B	WB-DH	WB-BD	2G-R28	
34,42-38,10	1.355-1.500	2G-P28-1375WC†	ST-1375		WC-D\$	WC-B	WC-DH	WC-BD	2G-R28	
37,59-41,28	1.480-1.625	2G-P28-1500WD†	ST-1500		WD-D\$	WD-B	WD-DH	WD-BD	2G-R28	
40,77-44,45	1.605-1.750	2G-P28-1625WD†	ST-1600		WD-D\$	WD-B	WD-DH	WD-BD	2G-R28	
43,94-47,63	1.730-1.875	2G-P28-1750WE	ST-1700		WE-D\$	WE-B	WE-DH	WE-BD	2G-R28	
47,18-50,80	1.855-2.000	2H-P28-1875WE	ST-1875		WE-D\$	WE-B	WE-DH	WE-BD	2H-R28	
50,29-53,98	1.980-2.125	2H-P28-2000WF	ST-2000		WF-D\$	WF-B	WF-DH	WF-BD	2H-R28	6 Blind Hole See R28 Blind Hole Table on Page 2.51.
53,47-57,15	2.105-2.250	2H-P28-2125WF	ST-2100		WF-D\$	WF-B	WF-DH	WF-BD	2H-R28	
56,64-60,33	2.230-2.375	2H-P28-2250WF	ST-2200		WF-D\$	WF-B	WF-DH	WF-BD	2H-R28	
59,81-63,50	2.355-2.500	2H-P28-2375WG	ST-2375		WG-D\$	WG-B	WG-DH	WG-BD	2H-R28	
62,99-66,68	2.480-2.625	2H-P28-2500WG	ST-2500		WG-D\$	WG-B	WG-DH	WG-BD	2H-R28	
66,17-69,85	2.605-2.750	2K-P28-2625SC	ST-2625			SC-B\$	SC-BH	SC-B-DX+	2K-R28-1	
69,34-73,03	2.730-2.875	2K-P28-2750SC	ST-2750			SC-B\$	SC-BH	SC-B-DX+	2K-R28-1	
72,52-76,20	2.855-3.000	2K-P28-2875SC	ST-2875			SC-B\$	SC-BH	SC-B-DX+	2K-R28-1	
75,69-79,38	2.980-3.125	2K-P28-3000SC	ST-3000			SC-B\$	SC-BH	SC-B-DX+	2K-R28-1	
78,87-82,55	3.105-3.250	2K-P28-3125SD	ST-3125			SD-B\$	SD-BH	SD-B-DX+	2K-R28-1	
82,04-85,73	3.230-3.375	2K-P28-3250SD+	ST-3250			SD-B\$	SD-BH	SD-B-DX+	2K-R28-1	
85,22-88,90	3.355-3.500	2K-P28-3375SD+	ST-3375			SD-B\$	SD-BH	SD-B-DX+	2K-R28-1	
88,39-92,08	3.480-3.625	2K-P28-3500SD+	ST-3500			SD-B\$	SD-BH	SD-B-DX+	2K-R28-1	
91,57-95,25	3.605-3.750	2K-P28-3625SD+	ST-3625			SD-B\$	SD-BH	SD-B-DX+	2K-R28-1	
94,74-98,43	3.730-3.875	2K-P28-3750SD+	ST-3750			SD-B\$	SD-BH	SD-B-DX+	2K-R28-1	
97,92-101,60	3.855-4.000	2K-P28-3875SD+	ST-3875+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
101,09-104,78	3.980-4.125	2K-P28-4000SD+	ST-4000+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
104,27-107,95	4.105-4.250	2K-P28-4125SD+	ST-4125+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
107,44-111,13	4.230-4.375	2K-P28-4250SD+	ST-4250+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
110,62-114,30	4.355-4.500	2K-P28-4375SD+	ST-4375+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
113,79-117,48	4.480-4.625	2K-P28-4500SD+	ST-4500+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
116,97-120,65	4.605-4.750	2K-P28-4625SD+	ST-4625+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
120,14-123,83	4.730-4.875	2K-P28-4750SD+	ST-4750+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
123,32-127,00	4.855-5.000	2K-P28-4875SD+	ST-4875+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
126,49-130,18	4.980-5.125	2K-P28-5000SD+	ST-5000+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-2+	
129,67-133,35	5.105-5.250	2K-P28-5125SD+	ST-5125+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	
132,84-136,53	5.230-5.375	2K-P28-5250SD+	ST-5250+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	
136,02-139,70	5.355-5.500	2K-P28-5375SD+	ST-5375+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	
139,19-142,88	5.480-5.625	2K-P28-5500SD+	ST-5500+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	
142,37-146,05	5.605-5.750	2K-P28-5625SD+	ST-5625+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	
145,54-149,23	5.730-5.875	2K-P28-5750SD+	ST-5750+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	
148,72-152,40	5.855-6.000	2K-P28-5875SD+	ST-5875+			SD-B\$	SD-BH	SD-B-DX+	2K-R28-3+	

5 Open Hole
See P28
Open Hole
Table on
Page 2.50.

6 Blind Hole
See R28
Blind Hole
Table on
Page 2.51.

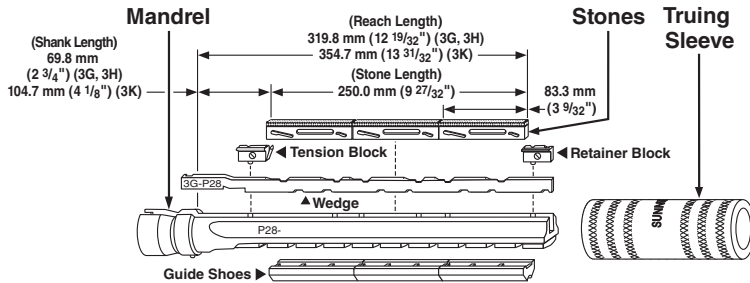
Sunaloy® General purpose shoe for most honing applications **Furnished with Mandrel.**
Zinc For most honing operations except fine finish **Furnished with Mandrel.**
Bronze For finer finishes and soft or difficult materials **Order separately.**
Hard Steel For production honing or hard, rough parts or carbide, ceramic, etc **Order separately.**
Diamond Plated For fast stock removal and longer shoe life (120 grit) **Order separately.**

† Requires use of LN570A Concentric Sleeve.
§ Supplied with Mandrel. All others, order separately.
+ Special Order - Contact Customer Service

P28

3-Stone Honing Units

Diameter Range:
25,15 mm – 152,40 mm
.990" – 6"



NOTE: Mandrels can be used with fewer than 3 stones for shorter parts which require long reach.

Open Hole: Order 1, 2, 5 For Complete P28 3-Stone Honing Units
Blind Hole: Order 1, 2, 4, 6 For Complete P28 3-Stone Honing Units

Diameter Range 25,15 mm - 152,40 mm .990" - 6"		1 P28 Mandrel Assembled for open hole work. Includes Wedge and Guide Shoes	2 Truing Sleeve	3 Replacement Guide Shoes 3 required SC and SD Guide Shoes Order 2 Guide Shoes per number of stones used	4 Wedge Blind Hole Replace When Wear Begins To Show	Honing Stone				
mm	inches			Sunaloy	Zinc	Bronze	Hard Steel	Diamond Plated		
25,15-26,97	.990-1.062	3G-P28-1000VA†	ST-1000	VA-C\$		VA-B	VA-CH	VA-BD	3G-R28	5 Open Hole See P28 Open Hole Table on Page 2.50.
26,72-28,58	1.052-1.125	3G-P28-1062VA†	ST-1062	VA-C\$		VA-B	VA-CH	VA-BD	3G-R28	
28,32-30,15	1.115-1.187	3G-P28-1125VB†	ST-1125	VB-C\$		VB-B	VB-CH	VB-BD	3G-R28	
29,90-31,75	1.177-1.250	3G-P28-1187VB†	ST-1187	VB-C\$		VB-B	VB-CH	VB-BD	3G-R28	
31,24-34,93	1.230-1.375	3G-P28-1250WB†	ST-1250		WB-D\$	WB-B	WB-DH	WB-BD	3G-R28	
34,42-38,10	1.355-1.500	3G-P28-1375WC†	ST-1375		WC-D\$	WC-B	WC-DH	WC-BD	3G-R28	
37,59-41,28	1.480-1.625	3G-P28-1500WD†	ST-1500		WD-D\$	WD-B	WD-DH	WD-BD	3G-R28	
40,77-44,45	1.605-1.750	3G-P28-1625WD†	ST-1600		WD-D\$	WD-B	WD-DH	WD-BD	3G-R28	
43,94-47,63	1.730-1.875	3G-P28-1750WE	ST-1700		WE-D\$	WE-B	WE-DH	WE-BD	3G-R28	
47,18-50,80	1.855-2.000	3H-P28-1875WE	ST-1875		WE-D\$	WE-B	WE-DH	WE-BD	3H-R28	
50,29-53,98	1.980-2.125	3H-P28-2000WF	ST-2000		WF-D\$	WF-B	WF-DH	WF-BD	3H-R28	6 Blind Hole See R28 Blind Hole Table on Page 2.51.
53,47-57,15	2.105-2.250	3H-P28-2125WF	ST-2100		WF-D\$	WF-B	WF-DH	WF-BD	3H-R28	
56,64-60,33	2.230-2.375	3H-P28-2250WF	ST-2200		WF-D\$	WF-B	WF-DH	WF-BD	3H-R28	
59,81-63,50	2.355-2.500	3H-P28-2375WG	ST-2375		WG-D\$	WG-B	WG-DH	WG-BD	3H-R28	
62,99-66,68	2.480-2.625	3H-P28-2500WG	ST-2500		WG-D\$	WG-B	WG-DH	WG-BD	3H-R28	
66,17-69,85	2.605-2.750	3K-P28-2625SC†	ST-2625			SC-B\$	SC-BH	SC-B-DX†	3K-R28-1	
69,34-73,03	2.730-2.875	3K-P28-2750SC†	ST-2750			SC-B\$	SC-BH	SC-B-DX†	3K-R28-1	
72,52-76,20	2.855-3.000	3K-P28-2875SC†	ST-2875			SC-B\$	SC-BH	SC-B-DX†	3K-R28-1	
75,69-79,38	2.980-3.125	3K-P28-3000SC†	ST-3000			SC-B\$	SC-BH	SC-B-DX†	3K-R28-1	
78,87-82,55	3.105-3.250	3K-P28-3125SD†	ST-3125			SD-B\$	SD-BH	SD-B-DX†	3K-R28-1	
82,04-85,73	3.230-3.375	3K-P28-3250SD†	ST-3250			SD-B\$	SD-BH	SD-B-DX†	3K-R28-1	
85,22-88,90	3.355-3.500	3K-P28-3375SD†	ST-3375			SD-B\$	SD-BH	SD-B-DX†	3K-R28-1	
88,39-92,08	3.480-3.625	3K-P28-3500SD†	ST-3500			SD-B\$	SD-BH	SD-B-DX†	3K-R28-1	
91,57-95,25	3.605-3.750	3K-P28-3625SD†	ST-3625			SD-B\$	SD-BH	SD-B-DX†	3K-R28-1	
94,74-98,43	3.730-3.875	3K-P28-3750SD†	ST-3750			SD-B\$	SD-BH	SD-B-DX†	3K-R28-1	
97,92-101,60	3.855-4.000	3K-P28-3875SD†	ST-3875†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
101,09-104,78	3.980-4.125	3K-P28-4000SD†	ST-4000†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
104,27-107,95	4.105-4.250	3K-P28-4125SD†	ST-4125†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
107,44-111,13	4.230-4.375	3K-P28-4250SD†	ST-4250†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
110,62-114,30	4.355-4.500	3K-P28-4375SD†	ST-4375†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
113,79-117,48	4.480-4.625	3K-P28-4500SD†	ST-4500†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
116,97-120,65	4.605-4.750	3K-P28-4625SD†	ST-4625†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
120,14-123,83	4.730-4.875	3K-P28-4750SD†	ST-4750†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
123,32-127,00	4.855-5.000	3K-P28-4875SD†	ST-4875†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
126,49-130,18	4.980-5.125	3K-P28-5000SD†	ST-5000†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-2†	
129,67-133,35	5.105-5.250	3K-P28-5125SD†	ST-5125†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	
132,84-136,53	5.230-5.375	3K-P28-5250SD†	ST-5250†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	
136,02-139,70	5.355-5.500	3K-P28-5375SD†	ST-5375†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	
139,19-142,88	5.480-5.625	3K-P28-5500SD†	ST-5500†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	
142,37-146,05	5.605-5.750	3K-P28-5625SD†	ST-5625†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	
145,54-149,23	5.730-5.875	3K-P28-5750SD†	ST-5750†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	
148,72-152,40	5.855-6.000	3K-P28-5875SD†	ST-5875†			SD-B\$	SD-BH	SD-B-DX†	3K-R28-3†	

Sunloy® General purpose shoe for most honing applications Furnished with Mandrel.
Zinc For most honing operations except fine finish Furnished with Mandrel.
Bronze For finer finishes and soft or difficult materials Order separately.
Hard Steel For production honing or hard, rough parts or carbide, ceramic, etc Order separately.
Diamond Plated For fast stock removal and longer shoe life (120 grit) Order separately.

† Requires use of LN570A Concentric Sleeve.

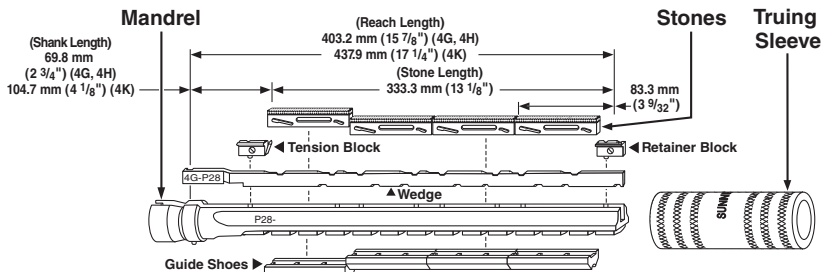
§ Supplied with Mandrel. All others, order separately.

* Special Order - Contact Customer Service

P28

4-Stone Honing Units

Diameter Range:
25,15 mm – 152,40 mm
.990" – 6"



NOTE: Mandrels can be used with fewer than 4 stones for shorter parts which require long reach.

Open Hole: Order 1, 2, 5 For Complete P28 4-Stone Honing Units
Blind Hole: Order 1, 2, 4, 6 For Complete P28 4-Stone Honing Units

Diameter Range 25,15 mm - 152,40 mm .990" - 6"		1 P28 Mandrel Assembled for open hole work. Includes Wedge and Guide Shoes	2 Truing Sleeve	3 Replacement Guide Shoes 4 required SC and SD Guide Shoes Order 2 Guide Shoes per number of stones used	4 Wedge Blind Hole Replace When Wear Begins To Show	Honing Stone			
mm	inches			Sunaloy	Zinc	Bronze	Hard Steel	Diamond Plated	
25,15-26,97	.990-1.062	4G-P28-1000VA†	ST-1000	VA-C\$		VA-B	VA-CH	VA-BD	4G-R28
26,72-28,58	1.052-1.125	4G-P28-1062VA†	ST-1062	VA-C\$		VA-B	VA-CH	VA-BD	4G-R28
28,32-30,15	1.115-1.187	4G-P28-1125VB†	ST-1125	VB-C\$		VB-B	VB-CH	VB-BD	4G-R28
29,90-31,75	1.177-1.250	4G-P28-1187VB†	ST-1187	VB-C\$		VB-B	VB-CH	VB-BD	4G-R28
31,24-34,93	1.230-1.375	4G-P28-1250WB†	ST-1250		WB-D\$	WB-B	WB-DH	WB-BD	4G-R28
34,42-38,10	1.355-1.500	4G-P28-1375WC†	ST-1375		WC-D\$	WC-B	WC-DH	WC-BD	4G-R28
37,59-41,28	1.480-1.625	4G-P28-1500WD†	ST-1500		WD-D\$	WD-B	WD-DH	WD-BD	4G-R28
40,77-44,45	1.605-1.750	4G-P28-1625WD†	ST-1600		WD-D\$	WD-B	WD-DH	WD-BD	4G-R28
43,94-47,63	1.730-1.875	4G-P28-1750WE	ST-1700		WE-D\$	WE-B	WE-DH	WE-BD	4G-R28
47,18-50,80	1.855-2.000	4H-P28-1875WE	ST-1875		WE-D\$	WE-B	WE-DH	WE-BD	4H-R28
50,29-53,98	1.980-2.125	4H-P28-2000WF	ST-2000		WF-D\$	WF-B	WF-DH	WF-BD	4H-R28
53,47-57,15	2.105-2.250	4H-P28-2125WF	ST-2100		WF-D\$	WF-B	WF-DH	WF-BD	4H-R28
56,64-60,33	2.230-2.375	4H-P28-2250WF	ST-2200		WF-D\$	WF-B	WF-DH	WF-BD	4H-R28
59,81-63,50	2.355-2.500	4H-P28-2375WG	ST-2375		WG-D\$	WG-B	WG-DH	WG-BD	4H-R28
62,99-66,68	2.480-2.625	4H-P28-2500WG	ST-2500		WG-D\$	WG-B	WG-DH	WG-BD	4H-R28
66,17-69,85	2.605-2.750	4K-P28-2625SC†	ST-2625			SC-B\$	SC-BH	SC-B-DX†	4K-R28-1†
69,34-73,03	2.730-2.875	4K-P28-2750SC†	ST-2750			SC-B\$	SC-BH	SC-B-DX†	4K-R28-1†
72,52-76,20	2.855-3.000	4K-P28-2875SC†	ST-2875			SC-B\$	SC-BH	SC-B-DX†	4K-R28-1†
75,69-79,38	2.980-3.125	4K-P28-3000SC†	ST-3000			SC-B\$	SC-BH	SC-B-DX†	4K-R28-1†
78,87-82,55	3.105-3.250	4K-P28-3125SD†	ST-3125			SD-B\$	SD-BH	SD-B-DX†	4K-R28-1†
82,04-85,73	3.230-3.375	4K-P28-3250SD†	ST-3250			SD-B\$	SD-BH	SD-B-DX†	4K-R28-1†
85,22-88,90	3.355-3.500	4K-P28-3375SD†	ST-3375			SD-B\$	SD-BH	SD-B-DX†	4K-R28-1†
88,39-92,08	3.480-3.625	4K-P28-3500SD†	ST-3500			SD-B\$	SD-BH	SD-B-DX†	4K-R28-1†
91,57-95,25	3.605-3.750	4K-P28-3625SD†	ST-3625			SD-B\$	SD-BH	SD-B-DX†	4K-R28-1†
94,74-98,43	3.730-3.875	4K-P28-3750SD†	ST-3750			SD-B\$	SD-BH	SD-B-DX†	4K-R28-1†
97,92-101,60	3.855-4.000	4K-P28-3875SD†	ST-3875†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
101,09-104,78	3.980-4.125	4K-P28-4000SD†	ST-4000†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
104,27-107,95	4.105-4.250	4K-P28-4125SD†	ST-4125†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
107,44-111,13	4.230-4.375	4K-P28-4250SD†	ST-4250†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
110,62-114,30	4.355-4.500	4K-P28-4375SD†	ST-4375†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
113,79-117,48	4.480-4.625	4K-P28-4500SD†	ST-4500†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
116,97-120,65	4.605-4.750	4K-P28-4625SD†	ST-4625†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
120,14-123,83	4.730-4.875	4K-P28-4750SD†	ST-4750†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
123,32-127,00	4.855-5.000	4K-P28-4875SD†	ST-4875†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
126,49-130,18	4.980-5.125	4K-P28-5000SD†	ST-5000†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-2†
129,67-133,35	5.105-5.250	4K-P28-5125SD†	ST-5125†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†
132,84-136,53	5.230-5.375	4K-P28-5250SD†	ST-5250†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†
136,02-139,70	5.355-5.500	4K-P28-5375SD†	ST-5375†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†
139,19-142,88	5.480-5.625	4K-P28-5500SD†	ST-5500†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†
142,37-146,05	5.605-5.750	4K-P28-5625SD†	ST-5625†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†
145,54-149,23	5.730-5.875	4K-P28-5750SD†	ST-5750†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†
148,72-152,40	5.855-6.000	4K-P28-5875SD†	ST-5875†			SD-B\$	SD-BH	SD-B-DX†	4K-R28-3†

5

Open Hole

See P28 Open Hole Table on Page 2.50.

6

Blind Hole

See R28 Blind Hole Table on Page 2.51.

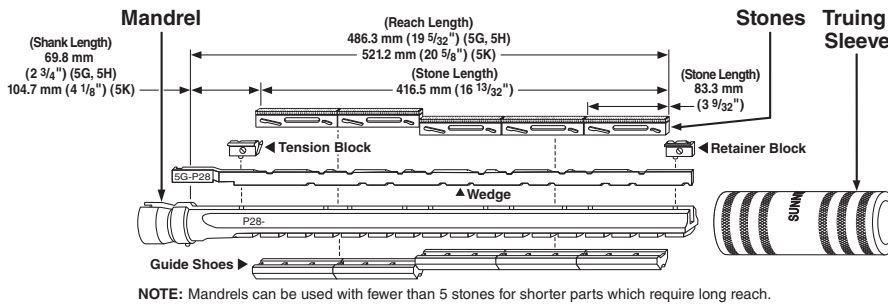
Sunaloy® General purpose shoe for most honing applications Furnished with Mandrel.
Zinc For most honing operations except fine finish Furnished with Mandrel.
Bronze For finer finishes and soft or difficult materials Order separately.
Hard Steel For production honing or hard, rough parts or carbide, ceramic, etc Order separately.
Diamond Plated For fast stock removal and longer shoe life (120 grit) Order separately.

† Requires use of LN570A Concentric Sleeve.
§ Supplied with Mandrel. All others, order separately.
+ Special Order - Contact Customer Service

P28

5-Stone Honing Units

Diameter Range:
25,15 mm – 152,40 mm
.990" – 6"



Open Hole: Order 1, 2, 4 For Complete P28 5-Stone Honing Units
Blind Hole: Order 1, 2, 3, 5 For Complete P28 5-Stone Honing Units

Diameter Range 25,15 mm - 152,40 mm .990" - 6"		1 P28 Mandrel Assembled for open hole work. Includes Wedge and Guide Shoes	2 Truing Sleeve	3 Replacement Guide Shoes 5 required SC and SD Guide Shoes Order 2 Guide Shoes per number of stones used					4 Wedge Blind Hole Replace When Wear Begins To Show	Honing Stone
mm	inches			Sunloy	Zinc	Bronze	Hard Steel	Diamond Plated		
25,15-26,97	.990-1.062	5G-P28-1000VA†	ST-1000	VA-C§		VA-B	VA-CH	VA-BD	5G-R28	5 Open Hole See P28 Open Hole Table on Page 2.50.
26,72-28,58	1.052-1.125	5G-P28-1062VA†	ST-1062	VA-C§		VA-B	VA-CH	VA-BD	5G-R28	
28,32-30,15	1.115-1.187	5G-P28-1125VB†	ST-1125	VB-C§		VB-B	VB-CH	VB-BD	5G-R28	
29,90-31,75	1.177-1.250	5G-P28-1187VB†	ST-1187	VB-C§		VB-B	VB-CH	VB-BD	5G-R28	
31,24-34,93	1.230-1.375	5G-P28-1250WB†	ST-1250		WB-D§	WB-B	WB-DH	WB-BD	5G-R28	
34,42-38,10	1.355-1.500	5G-P28-1375WC†	ST-1375		WC-D§	WC-B	WC-DH	WC-BD	5G-R28	
37,59-41,28	1.480-1.625	5G-P28-1500WD†	ST-1500		WD-D§	WD-B	WD-DH	WD-BD	5G-R28	
40,77-44,45	1.605-1.750	5G-P28-1625WD†	ST-1600		WD-D§	WD-B	WD-DH	WD-BD	5G-R28	
43,94-47,63	1.730-1.875	5G-P28-1750WE	ST-1700		WE-D§	WE-B	WE-DH	WE-BD	5G-R28	
47,18-50,80	1.855-2.000	5H-P28-1875WE	ST-1875		WE-D§	WE-B	WE-DH	WE-BD	5H-R28	6 Blind Hole See R28 Blind Hole Table on Page 2.51.
50,29-53,98	1.980-2.125	5H-P28-2000WF	ST-2000		WF-D§	WF-B	WF-DH	WF-BD	5H-R28	
53,47-57,15	2.105-2.250	5H-P28-2125WF	ST-2100		WF-D§	WF-B	WF-DH	WF-BD	5H-R28	
56,64-60,33	2.230-2.375	5H-P28-2250WF	ST-2200		WF-D§	WF-B	WF-DH	WF-BD	5H-R28	
59,81-63,50	2.355-2.500	5H-P28-2375WG	ST-2375		WG-D§	WG-B	WG-DH	WG-BD	5H-R28	
62,99-66,68	2.480-2.625	5H-P28-2500WG†	ST-2500		WG-D§	WG-B	WG-DH	WG-BD	5H-R28	
66,17-69,85	2.605-2.750	5K-P28-2625SC†	ST-2625			SC-B§	SC-BH	SC-B-DX†	5K-R28-1†	
69,34-73,03	2.730-2.875	5K-P28-2750SC†	ST-2750			SC-B§	SC-BH	SC-B-DX†	5K-R28-1†	
72,52-76,20	2.855-3.000	5K-P28-2875SC†	ST-2875			SC-B§	SC-BH	SC-B-DX†	5K-R28-1†	
75,69-79,38	2.980-3.125	5K-P28-3000SC†	ST-3000			SC-B§	SC-BH	SC-B-DX†	5K-R28-1†	
78,87-82,55	3.105-3.250	5K-P28-3125SD†	ST-3125			SD-B§	SD-BH	SD-B-DX†	5K-R28-1†	
82,04-85,73	3.230-3.375	5K-P28-3250SD†	ST-3250			SD-B§	SD-BH	SD-B-DX†	5K-R28-1†	
85,22-88,90	3.355-3.500	5K-P28-3375SD†	ST-3375			SD-B§	SD-BH	SD-B-DX†	5K-R28-1†	
88,39-92,08	3.480-3.625	5K-P28-3500SD†	ST-3500			SD-B§	SD-BH	SD-B-DX†	5K-R28-1†	
91,57-95,25	3.605-3.750	5K-P28-3625SD†	ST-3625			SD-B§	SD-BH	SD-B-DX†	5K-R28-1†	
94,74-98,43	3.730-3.875	5K-P28-3750SD†	ST-3750			SD-B§	SD-BH	SD-B-DX†	5K-R28-1†	
97,92-101,60	3.855-4.000	5K-P28-3875SD†	ST-3875†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
101,09-104,78	3.980-4.125	5K-P28-4000SD†	ST-4000†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
104,27-107,95	4.105-4.250	5K-P28-4125SD†	ST-4125†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
107,44-111,13	4.230-4.375	5K-P28-4250SD†	ST-4250†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
110,62-114,30	4.355-4.500	5K-P28-4375SD†	ST-4375†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
113,79-117,48	4.480-4.625	5K-P28-4500SD†	ST-4500†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
116,97-120,65	4.605-4.750	5K-P28-4625SD†	ST-4625†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
120,14-123,83	4.730-4.875	5K-P28-4750SD†	ST-4750†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
123,32-127,00	4.855-5.000	5K-P28-4875SD†	ST-4875†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
126,49-130,18	4.980-5.125	5K-P28-5000SD†	ST-5000†			SD-B§	SD-BH	SD-B-DX†	5K-R28-2†	
129,67-133,35	5.105-5.250	5K-P28-5125SD†	ST-5125†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	
132,84-136,53	5.230-5.375	5K-P28-5250SD†	ST-5250†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	
136,02-139,70	5.355-5.500	5K-P28-5375SD†	ST-5375†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	
139,19-142,88	5.480-5.625	5K-P28-5500SD†	ST-5500†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	
142,37-146,05	5.605-5.750	5K-P28-5625SD†	ST-5625†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	
145,54-149,23	5.730-5.875	5K-P28-5750SD†	ST-5750†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	
148,72-152,40	5.855-6.000	5K-P28-5875SD†	ST-5875†			SD-B§	SD-BH	SD-B-DX†	5K-R28-3†	

Sunloy® General purpose shoe for most honing applications Furnished with Mandrel.
Zinc For most honing operations except fine finish Furnished with Mandrel.
Bronze For finer finishes and soft or difficult materials Order separately.
Hard Steel For production honing or hard, rough parts or carbide, ceramic, etc Order separately.
Diamond Plated For fast stock removal and longer shoe life (120 grit) Order separately.

† Requires use of LN570A Concentric Sleeve.

§ Supplied with Mandrel. All others, order separately.

+ Special Order - Contact Customer Service

Open Hole P28 Honing Stones

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require hard stones; soft materials require soft stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

†For best results, use with bronze guide shoes.

Available Stones

		Grit Size											
		70	80	100	150	220	280	320	400	500	600	900	1200
Hard-----Soft	Aluminum Oxide Stones (A) - 12 per box												
		P28-A23 P28-A25		P28-A43 P28-A45	P28-A53 P28-A55 P28-A56	P28-A61 P28-A63 P28-A65	P28-A73 P28-A75						
		P28-A27 P28-A28		P28-A47 P28-A49	P28-A57 P28-A58 P28-A59	P28-A67 P28-A68 P28-A69	P28-A77 P28-A79						
				P28-A411 P28-A413									
Hard-----Soft	Silicon Carbide Stones (J,C) - 12 per box												
		P28-J25		P28-J45	P28-J55	P28-J63 P28-J65		P28-J83 P28-J85	P28-J93 P28-J95	P28-CO5†			
		P28-J27		P28-J47	P28-J57	P28-J67		P28-J87	P28-J97				
				P28-J49	P28-J59	P28-J69 P28-J611		P28-J89	P28-J99				
Hard-----Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box												
			P28-DM35	P28-DMB45 P28-DM45	P28-DM55 P28-DM57	P28-DM65		P28-DM85 P28-DM87	MP28-DM95 P28-DM95	MP28-DM05 P28-DM05	P28-DM905	P28-DR007 P28-DM005	
				P28-DV47	P28-DV57			P28-DV87		P28-DV07			
					P28-NR51 P28-NR53			P28-NR83					
	P28-NM15 P28-NM17		HP28-NM35		HP28-NM55 P28-NMG55 P28-NMG57					P28-NMG05 P28-NM05	P28-NM905	P28-NM005	
		P28-NM35 P28-NM37	P28-NM45 P28-NM47	P28-NM55 P28-NM57 P28-NM59	P28-NM65 P28-NM67		P28-NM85 P28-NM87	P28-NM95					

Recommended Stones for Open Hole P28 Honing Units

Material	Low-Volume		High-Volume	
	Stone to use	Approx. R _a Surface Finish µm µin	Stone to use	Approx. R _a Surface Finish µm µin
Deburring: rough holes, all materials				
	P28-A413	—	P28-A413	—
Fast removal: deburred, bored, ground, reamed holes				
Aluminum	P28-J57	1,38 55	P28-DM85	1,25 50
Brass, Soft	P28-J63	0,83 33	P28-J63	0,83 33
Bronze	P28-J57	1,38 55	P28-J57	1,38 55
Carbide	P28-DM55	0,50 20	P28-DM55	0,50 20
Cast Iron	P28-J57	0,50 20	P28-DM55	2,00 80
Ceramic	P28-DM55	1,00 40	P28-DM55	1,00 40
Glass	P28-DM55	1,75 70	P28-DM55	1,75 70
Steel, Soft	P28-A57	0,75 30	P28-NM55	1,25 50
Steel, Hardened*	P28-A55	0,30 12	P28-NM55	1,00 40
Steel, Hardened**	P28-A63	0,30 12	—	—
Steel, Very Hard***	P28-NM55	1,00 40	—	—
Fine finishing: previously honed holes				
Aluminum	P28-J95	0,30 12	P28-DM05	0,83 33
Brass, Soft	P28-J83	0,40 16	P28-J83	0,40 16
Bronze	P28-J95	0,30 12	P28-J95	0,30 12
Carbide	P28-DM05	0,08 3	P28-DM05	0,08 3
Cast Iron	P28-J95	0,13 5	P28-DM05	0,50 20
Ceramic	P28-DM05	0,38 15	P28-DM05	0,38 15
Glass	P28-DM05	0,38 15	P28-DM05	0,38 15
Steel, Soft	P28-J85	0,10 4	P28-NM05	0,40 16
Steel, Hardened	P28-J93	0,13 5	P28-NM05	0,18 7

* 1st choice
** 2nd choice. Use if A55 does not cut.
*** 3rd choice. Use if A63 does not cut.

Replacement Parts for P28 Honing Units (Both Open and Blind Hole)

Mandrel Range*	Wedge\$ Open Hole	Wedge\$ Blind Hole	Retainer Block	Tension Block	Guide Shoe Shims (set of 4)
G-P28-1000VA — G-P28-1187VB	_G-P28	_G-R28	LN-1329A	LN-1336A	LN-1144
G-P28-1250WB — G-P28-1750WE	_G-P28	_G-R28	LN-1329A	LN-1336A	LN-1156
H-P28-1875WE — H-P28-2500WG	H-P28	_H-R28	LN-1330A	LN-1337A	LN-1156
J-P28-2625SC — J-P28-3750SD	_J-P28	_J-R28	LN-1329A	LN-1336A	LN-1156
K-P28-2625SC — K-P28-3750SD	K-P28-1	_K-R28-1	LN-1329A	LN-1336A	LN-1156
K-P28-3875SD — K-P28-5000SD	K-P28-2	_K-R28-2	LN-1329A	LN-1336A	LN-1156
K-P28-5125SD — K-P28-5875SD	_K-P28-3	_K-R28-3	LN-1329A	LN-1336A	LN-1156

\$ Insert 2,3,4 or 5 depending on stone number. Ex. 4G-P28 Wedge for 4-Stone Mandrel

Automatic Size Control Probes

26mm - 51mm (1"-2")

Setting Fixture required for centering and setting Sensing Units. Order ASC-50 Setting Fixture. (For metric version, specify ASC-50M.)

Sensing Tip Part No.	Diameter Range	
	mm	in
ASC-51	26-32	1 - 1 1/4
ASC-52	32-38	1 1/4 - 1 1/2
ASC-53	38-45	1 1/2 - 1 3/4
ASC-54	45-51	1 3/4 - 2

For use on machines with Automatic Size Control units. Select the appropriate size control probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. probes.

* Special Order - Contact Customer Service

Blind Hole R28 Honing Stones

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

†For best results, use with bronze guide shoes.

- * 1st choice
- ** 2nd choice. Use if A55 does not cut.
- *** 3rd choice. Use if A63 does not cut.



Available Stones

		Grit Size										
		70	80	100	150	220	280	320	400	500	600	900 1200
Soft	Hard	Aluminum Oxide Stones (A) - 12 per box										
					R28-A43 R28-A45 R28-A4501A	R28-A55 R28-A5501A R28-A56 R28-A57	R28-A63 R28-A65	R28-A73 R28-A75				
					R28-A47 R28-A4701A R28-A49 R28-A4901A RL28-A411 R28-A413	R28-A5701A R28-A59 R28-A5901A	R28-A67 R28-A69	R28-A77				
								R28-A7701A	R28-A8701A			
Soft	Hard	Silicon Carbide Stones (J,C) - 12 per box										
					R28-J45	R28-J55	R28-J63 R28-J65 R28-J6501A	R28-J83 R28-J85 R28-J8501A	R28-J93 R28-J95 R28-J9501A		R28-C05†	
		R28-J27			R28-J47	R28-J57 R28-J5701A	R28-J67 R28-J6701A	R28-J87 R28-J8701A	R28-J97			
					R28-J49	R28-J59	R28-J69	R28-J89	R28-J99			
Soft	Hard	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vittrified (V) Bond - 1 per box										
						R28-DM55			R28-DM85		R28-DM05	
						R28-DV57			R28-DV87		R28-DV07	
						R28-NR53 R28-NMG57 R28-NM55 R28-NM57			R28-NR83			
			R28-NM35 R28-NM37	R28-NM45					R28-NM85	R28-NM95	R28-NM05	R28-NM005

Recommended Stones for Blind Hole R28 Honing Units

Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm	µin	Stone to use	Approx. R _a Surface Finish µm	µin
Deburring: rough holes, all materials						
	R28-A413	—	—	R28-A413	—	—
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	R28-J57	1,38	55	R28-DM85	1,25	50
Brass, Soft	R28-J63	0,83	33	R28-J63	0,83	33
Bronze	R28-J57	1,38	55	R28-J57	1,38	55
Carbide	R28-DM55	0,50	20	R28-DM55	0,50	20
Cast Iron	R28-J57	0,50	20	R28-DM55	2,00	80
Ceramic	R28-DM55	1,00	40	R28-DM55	1,00	40
Glass	R28-DM55	1,75	70	R28-DM55	1,75	70
Steel, Soft	R28-A57	0,75	30	R28-NM55	1,25	50
Steel, Hardened*	R28-A55	0,30	12	R28-NM55	1,00	40
Steel, Hardened**	R28-A63	0,30	12	—	—	—
Steel, Very Hard***	R28-NM55	1,00	40	—	—	—
Fine finishing: previously honed holes						
Aluminum	R28-J95	0,30	12	R28-DM05	0,83	33
Brass, Soft	R28-J83	0,40	16	R28-J83	0,40	16
Bronze	R28-J95	0,30	12	R28-J95	0,30	12
Carbide	R28-DM05	0,08	3	R28-DM05	0,08	3
Cast Iron	R28-J95	0,13	5	R28-DM05	0,50	5
Ceramic	R28-DM05	0,38	15	R28-DM05	0,38	15
Glass	R28-DM05	0,38	15	R28-DM05	0,38	15
Steel, Soft	R28-J95	0,10	4	R28-NM05	0,40	16
Steel, Hardened	R28-J83	0,13	5	R28-NM05	0,18	7

PHT Plateau Hone Tools

Sunnen's PHT tools are used as a final finishing step, after initial honing, to provide a plateau surface on cylinder walls. Made from special abrasive impregnated filament, these long-lasting honing tools are available for portable and CV/CK hone heads. For additional information contact your local Sunnen Field Engineer or call Customer Service toll-free in St. Louis.

Abrasive Set for all P28 Style Mandrels.

Diameter Range		Abrasive Set (320 Grit)
mm	in	
25,146-152,4	.990-6.00	P28-PHT 731

Alignment Bushings

For machines with fully adjustable spindle nose.

Part Number	Bore Size	
	mm	inches
C-1000	25,40	1.000
C-1062	26,97	1.0625
C-1125	28,58	1.125
C-1187	30,15	1.1875
C-1250	31,75	1.250

For bores whose finish size falls between the diameters listed in the table, select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece. For bushing diameters outside the standard range call your Sunnen representative.

Hard-tipped Stones

Silicon Carbide (J)	Aluminum Oxide (A)
R28-J57-01A	R28-A47-01A
R28-J85-01A	R28-A49-01A
R28-J87-01A	R28-A55-01A
R28-J95-01A	R28-A57-01A
—	—
—	R28-A59-01A
—	R28-A87-01A

For honing blind hole bores available from stock (12 per box).

Additional Guide Shoes

Carbide Inserted	Metal Bond Superabrasive (Specify type of abrasive: Diamond or Borazon/CBN; Grit size and hardness)	
VA-B-TX+	VA-B-	JS2X+
VB-B-TX+	VB-B-	JS2X+
WB-D-TX+	WB-D-	HW8X+
WC-D-TX+	WC-D-	HW8X+
WD-D-TX+	WD-D-	HW8X+
WE-D-TX+	WE-D-	HW8X+
WF-D-TX+	WF-D-	HW8X+
WG-D-TX+	WG-D-	HW8X+
SC-B-TX+	SC-B-	LJ7X†
SD-B-TX+	SD-B-	LJ7X†

†Order 2 shoes per number of stones used.

* Special Order - Contact Customer Service

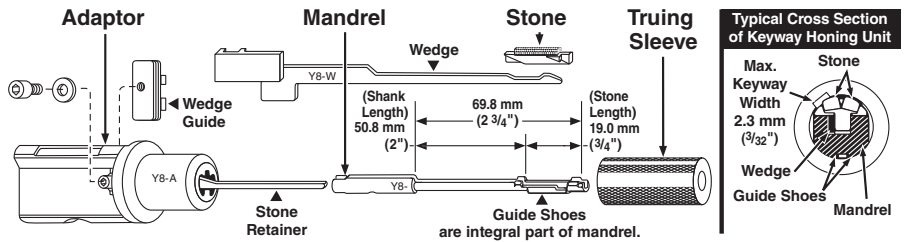
Y8

Keyway Honing Units

Diameter Range:

6,22 mm – 7,82 mm

.245" – .308"



Order 1-5 For Complete Y8 Keyway Honing Units

Diameter Range 6,22 mm - 7,82 mm .245" - .308"		1 Y8 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	With Standard Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	See All Stone Tables At Right
6,22-6,35	.245-.250	Y8-245B	S	H	B+	
6,35-6,48	.250-.255	Y8-250B	S	H	B+	
6,48-6,60	.255-.260	Y8-255B	S	H	B+	
6,60-6,73	.260-.265	Y8-260B	S	H	B+	
6,73-6,86	.265-.270	Y8-265B	S	H	B+	
6,86-6,98	.270-.275	Y8-270B	S	H	B+	
6,98-7,11	.275-.280	Y8-275B	S	H	B+	
7,11-7,24	.280-.285	Y8-280B	S	H	B+	
7,24-7,37	.285-.290	Y8-285B	S	H	B+	
7,37-7,49	.290-.295	Y8-290B	S	H	B+	
7,49-7,62	.295-.300	Y8-295B	S	H	B+	
7,62-7,82	.300-.308	Y8-300B	S	H	B+	

Y8 Mandrel Replacement Parts

Y8-W	Wedge Replace when wear <i>begins</i> to show
LN-3117A	Stone Retainer
LN-3211A	Wedge Guide

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.
+ = *Special Order. Contact Customer Service.*

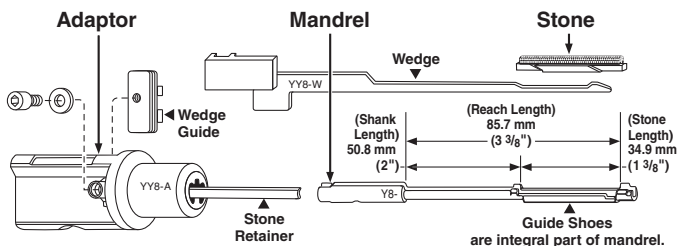
YY8

Keyway Honing Units

Diameter Range:

6,22 mm – 7,82 mm

.245" – .308"



Order 1-5 For Complete YY8 Keyway Honing Units

Diameter Range 6,22 mm - 7,82 mm .245" - .308"		1 YY8 Mandrel+ Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	With Standard Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	See All Stone Tables At Right
6,22-6,35	.245-.250	YY8-245B	S+	H+	S-245	
6,35-6,48	.250-.255	YY8-250B	S+	H+	S-250	
6,48-6,60	.255-.260	YY8-255B	S+	H+	S-255	
6,60-6,73	.260-.265	YY8-260B	S+	H+	S-260	
6,73-6,86	.265-.270	YY8-265B	S+	H+	S-265	
6,86-6,98	.270-.275	YY8-270B	S+	H+	S-270	
6,98-7,11	.275-.280	YY8-275B	S+	H+	S-275	
7,11-7,24	.280-.285	YY8-280B	S+	H+	S-280	
7,24-7,37	.285-.290	YY8-285B	S+	H+	S-285	
7,37-7,49	.290-.295	YY8-290B	S+	H+	S-290	
7,49-7,62	.295-.300	YY8-295B	S+	H+	S-295	
7,62-7,82	.300-.308	YY8-300B	S+	H+	S-300	

YY8 Mandrel Replacement Parts

YY8-W	Wedge Replace when wear <i>begins</i> to show
-------	---

LN-3117A	Stone Retainer
LN-3211A	Wedge Guide

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service for price and availability.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

YY8 Mandrels are similar to Y8 Mandrels except stone length is 34,9 mm (1 3/8"). Use only when bore length or interruptions will not allow holes to be honed properly with standard Y8 Mandrels.

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
+ = Not available in bronze.
+ = *Special Order. Contact Customer Service.*

Y8 & YY8

Keyway Honing Units

Superabrasive Stone Inserted Guide Shoe Mandrels

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Extended Shank Mandrels

Available for honing parts that are too long to be honed with a standard mandrel. Tandem "In-Line" Mandrels Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

All Available Stones

		Grit Size									
		70	80	100	150	220	280	320	400	500	600 1200
Aluminum Oxide Stones (A) - Y8/12 per box, YY8/6 per box											
Hard--					Y8-A45	Y8-A55	Y8-A65				
--Soft					Y8-A47	Y8-A57	Y8-A67				
							Y8-A69				
Hard--											
--Soft											
Silicon Carbide Stones (J,C) - Y8/12 per box, YY8/6 per box											
Hard--					Y8-J47	Y8-J57	Y8-J63		Y8-J83	Y8-J93	
--Soft							Y8-J67		Y8-J85	Y8-J95	Y8-C05
									Y8-J87		
Hard--											
--Soft											

Recommended Stones for Y8/YY8 Mandrels

Material	Stone to use	Approx. R _a Surface Finish μm μin
Fast removal: deburred, bored, ground, reamed holes		
Aluminum	Y8/YY8-J57	1,38 55
Brass, Soft	Y8/YY8-J63	0,83 33
Bronze	Y8/YY8-J57	1,38 55
Cast Iron	Y8/YY8-J57	0,50 20
Steel, Soft	Y8/YY8-A57	0,65 25
Steel, Hardened*	Y8/YY8-A55	0,45 18
Steel, Hardened**	Y8/YY8-A63	0,30 12
Fine finishing: previously honed holes		
Aluminum	Y8/YY8-J95	0,30 12
Brass, Soft	Y8/YY8-J83	0,40 16
Bronze	Y8/YY8-J95	0,30 12
Cast Iron	Y8/YY8-J95	0,13 5
Steel, Soft	Y8/YY8-J95	0,10 4
Steel, Hardened	Y8/YY8-J83	0,13 5

* 1st choice
** 2nd choice.
Use if A55 does not cut.



Automatic Size Control Probes

6,10mm -8,20mm (.240"-.323")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter mm in		Diameter Range			
			Low		High	
ASC-0250	6,35	1/4	6,10	.240	6,58	.259
ASC-0266	6,75	17/64	6,50	.256	6,99	.275
ASC-0281	7	9/32	6,83	.269	7,32	.288
ASC-0297	7,54	19/64	7,29	.287	7,77	.306
ASC-0312	8	5/16	7,72	.304	8,20	.323

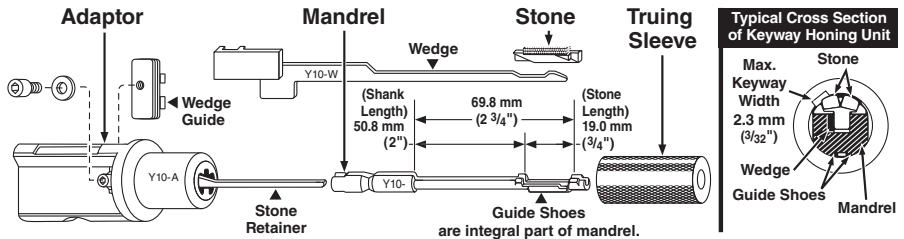
For production honing recommendations using superabrasive stones with Keyway Mandrels contact Customer Service.

* Special Order - Contact Customer Service

Y10

Keyway Honing Units

Diameter Range:
7,82 mm – 9,40 mm
.308" – .370"



Order 1-5 For Complete Y10 Keyway Honing Units

Diameter Range 7,82 mm - 9,40 mm .308" - .370"		1 Y10 Mandrel Includes wedge With Standard Shank	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
7,82-8,03	.308-.316	Y10-308B S H B+	S-308	Y10-A	C-308	See All Stone Tables At Right
8,03-8,20	.316-.323	Y10-316B S H B+	S-316	Y10-A	C-316	
8,20-8,41	.323-.331	Y10-323B S H B+	S-323	Y10-A	C-323	
8,41-8,61	.331-.339	Y10-331B S H B+	S-331	Y10-A	C-331	
8,61-8,81	.339-.347	Y10-339B S H B+	S-339	Y10-A	C-339	
8,81-8,99	.347-.354	Y10-347B S H B+	S-347	Y10-A	C-347	
8,99-9,19	.354-.362	Y10-354B S H B+	S-354	Y10-A	C-354	
9,19-9,40	.362-.370	Y10-362B S H B+	S-362	Y10-A	C-362	

Y10 Mandrel Replacement Parts

Y10-W	Wedge Replace when wear <i>begins</i> to show
LN-3117A	Stone Retainer
LN-3211A	Wedge Guide

Mandrel Options

- S = Steel Mandrel w/ soft shoes for honing most materials.
- H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
- B = Bronze Mandrel for very fine finishes and honing exotic metals.
- + = Special Order. Contact Customer Service.

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service for price and availability.

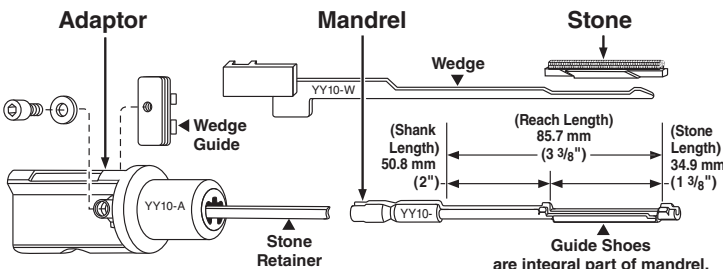
These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

YY10

Keyway Honing Units

Diameter Range:
7,82 mm – 9,40 mm
.308" – .370"



Order 1-5 For Complete YY10 Keyway Honing Units

Diameter Range 7,82 mm - 9,40 mm .308" - .370"		1 YY10 Mandrel ⁺ Includes wedge With Standard Shank	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
7,82-8,03	.308-.316	YY10-308B S ⁺ H ⁺	S-308	Y10-A	C-308	See All Stone Tables At Right
8,03-8,20	.316-.323	YY10-316B S ⁺ H ⁺	S-316	Y10-A	C-316	
8,20-8,41	.323-.331	YY10-323B S ⁺ H ⁺	S-323	Y10-A	C-323	
8,41-8,61	.331-.339	YY10-331B S ⁺ H ⁺	S-331	Y10-A	C-331	
8,61-8,81	.339-.347	YY10-339B S ⁺ H ⁺	S-339	Y10-A	C-339	
8,81-8,99	.347-.354	YY10-347B S ⁺ H ⁺	S-347	Y10-A	C-347	
8,99-9,19	.354-.362	YY10-354B S ⁺ H ⁺	S-354	Y10-A	C-354	
9,19-9,40	.362-.370	YY10-362B S ⁺ H ⁺	S-362	Y10-A	C-362	

YY10 Mandrel Replacement Parts

YY10-W	Wedge Replace when wear <i>begins</i> to show
LN-3117A	Stone Retainer
LN-3211A	Wedge Guide

Mandrel Options

- S = Steel Mandrel w/ soft shoes for honing most materials.
- H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
- B = Bronze Mandrel for very fine finishes and honing exotic metals.
- + = Special Order. Contact Customer Service.

YY10 Mandrels are similar to Y10 Mandrels except stone length is 34,9 mm (1 3/8"). Use only when bore length or interruptions will not allow holes to be honed properly with standard Y10 Mandrels.

Y10 & YY10

Keyway Honing Units

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

* 1st choice
** 2nd choice. Use if A55 does not cut.



		All Available Stones									
		Grit Size									
		70	80	100	150	220	280	320	400	500	600 1200
Hard-- --Soft		Aluminum Oxide Stones (A) - Y10/12 per box, YY10/6 per box									
					Y10-A45 Y10-A47	Y10-A55 Y10-A57 Y10-A59	Y10-A65 Y10-A67 Y10-A69				
Hard-- --Soft		Silicon Carbide Stones (J,C) - Y10/12 per box, YY10/6 per box									
						Y10-J57	Y10-J65 Y10-J67			Y10-J95	

Recommended Stones for Y10/YY10 Mandrels			
Material	Stone to use	Approx. R _a Surface Finish μm μin	
Fast removal: deburred, bored, ground, reamed holes			
Aluminum	Y10/YY10-J57	1,38	55
Brass, Soft	Y10/YY10-J63	0,83	33
Bronze	Y10/YY10-J57	1,38	55
Carbide	—	—	—
Cast Iron	Y10/YY10-J57	0,50	20
Ceramic	—	—	—
Glass	—	—	—
Steel, Soft	Y10/YY10-A57	0,65	25
Steel, Hardened*	Y10/YY10-A55	0,45	18
Fine finishing: previously honed holes			
Aluminum	Y10/YY10-J95	0,30	12
Brass, Soft	Y10/YY10-J95	0,40	16
Bronze	Y10/YY10-J95	0,30	12
Carbide	—	—	—
Cast Iron	Y10/YY10-J95	0,13	5
Ceramic	—	—	—
Glass	—	—	—
Steel, Soft	Y10/YY10-J95	0,10	4
Steel, Hardened	Y10/YY10-J95	0,13	5

Automatic Size Control Probes

7,72mm -9,75mm (.304"-.384")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
			Low		High	
	mm	in	mm	in	mm	in
ASC-0312	8	5/16	7,72	.304	8,20	.323
ASC-0328	8,33	21/64	8,08	.318	8,56	.337
ASC-0344	8,73	11/32	8,48	.334	8,97	.353
ASC-0359	9	23/64	8,81	.347	9,30	.366
ASC-0375	9,53	3/8	9,27	.365	9,75	.384

* Special Order - Contact Customer Service

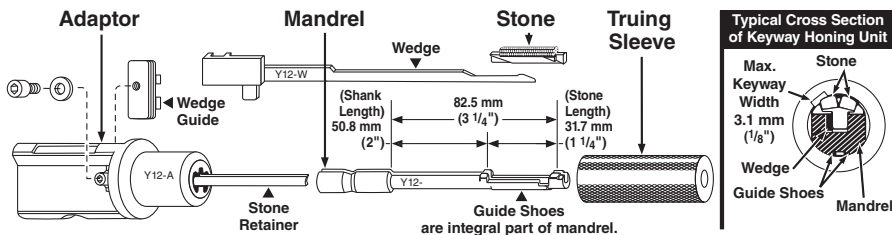
Y12

Keyway Honing Units

Diameter Range:

9,40 mm – 12,57 mm

.370" – .495"



Order 1-5 For Complete Y12 Keyway Honing Units

Diameter Range 9,40 mm - 12,57 mm .370" - .495"		1 Y12 Mandrel*	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
		Includes wedge With Standard Shank		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
mm	inches	Choose One Suffix				
9,40-9,78	.370-.385	Y12-370B S H B+	S-370	Y12-A	C-370	See All Stone Tables At Right
9,78-10,16	.385-.400	Y12-385B S H B+	S-385	Y12-A	C-385	
10,16-10,57	.400-.416	Y12-400B S H B+	S-400	Y12-A	C-400	
10,57-10,97	.416-.432	Y12-416B S H B+	S-416	Y12-A	C-416	
10,97-11,35	.432-.447	Y12-432B S H B+	S-432	Y12-A	C-432	
11,35-11,76	.447-.463	Y12-447B S H B+	S-447	Y12-A	C-447	
11,76-12,17	.463-.479	Y12-463B S H B+	S-463	Y12-A	C-463	
12,17-12,57	.479-.495	Y12-479B S H B+	S-479	Y12-A	C-479	

Y12 Mandrel Replacement Parts

Y12-W	Wedge Replace when wear <i>begins</i> to show
LN-3167A	Stone Retainer
LN-3214A	Wedge Guide

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.
+ = Special Order. Contact Customer Service.

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service for price and availability.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

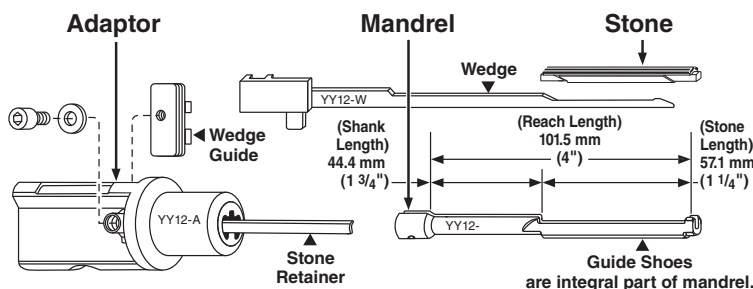
YY12

Keyway Honing Units

Diameter Range:

9,40 mm – 12,57 mm

.370" – .495"



Order 1-5 For Complete YY12 Keyway Honing Units

Diameter Range 9,40 mm - 12,57 mm .370" - .495"		1 YY12 Mandrel†	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
		Includes wedge With Standard Shank		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
mm	inches	Choose One Suffix				
9,40-9,78	.370-.385	YY12-370B S+ H+	S-370	Y12-A	C-370	See All Stone Tables At Right
9,78-10,16	.385-.400	YY12-385B S+ H+	S-385	Y12-A	C-385	
10,16-10,57	.400-.416	YY12-400B S+ H+	S-400	Y12-A	C-400	
10,57-10,97	.416-.432	YY12-416B S+ H+	S-416	Y12-A	C-416	
10,97-11,35	.432-.447	YY12-432B S+ H+	S-432	Y12-A	C-432	
11,35-11,76	.447-.463	YY12-447B S+ H+	S-447	Y12-A	C-447	
11,76-12,17	.463-.479	YY12-463B S+ H+	S-463	Y12-A	C-463	
12,17-12,57	.479-.495	YY12-479B S+ H+	S-479	Y12-A	C-479	

YY12 Mandrel Replacement Parts

YY12-W	Wedge Replace when wear <i>begins</i> to show
LN-3167A	Stone Retainer
LN-3214A	Wedge Guide

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
+ = Not available in bronze.
+ = Special Order. Contact Customer Service.

YY12 Mandrels are similar to Y12 Mandrels except stone length is 57,1 mm (2 1/4"). Use only when bore length or interruptions will not allow holes to be honed properly with standard Y12 Mandrels.

Y12 & YY12

Keyway Honing Units

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

CBN and Diamond Stones for Keyway Mandrels+

These Stones consist of a single stone mounted centrally in a metal holder.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

* 1st choice
** 2nd choice. Use if A55 does not cut.



All Available Stones

	Grit Size										
	70	80	100	150	220	280	320	400	500	600	1200
Hard-- --Soft	Aluminum Oxide Stones (A) - Y12/12 per box, YY12/6 per box										
				Y12-A45 Y12-A47 Y12-A49	Y12-A55 Y12-A57	Y12-A65 Y12-A67 Y12-A69					
Hard-- --Soft	Silicon Carbide Stones (J,C) - Y12/12 per box, YY12/6 per box										
					Y12-J57	Y12-J63 Y12-J65 Y12-J67		Y12-J83 Y12-J85 Y12-J87	Y12-J95		

Recommended Stones for Y12/YY12 Mandrels

Material	Stone to use	Low-Volume	
		Approx. R _a Surface Finish µm	µin
Fast removal: deburred, bored, ground, reamed holes			
Aluminum	Y12/YY12-J57	1,38	55
Brass, Soft	Y12/YY12-J63	0,83	33
Bronze	Y12/YY12-J57	1,38	55
Carbide	—	—	—
Cast Iron	Y12/YY12-J57	0,50	20
Ceramic	—	—	—
Glass	—	—	—
Steel, Soft	Y12/YY12-A57	0,65	25
Steel, Hardened*	Y12/YY12-A55	0,45	18
Fine finishing: previously honed holes			
Aluminum	Y12/YY12-J95	0,30	12
Brass, Soft	Y12/YY12-J83	0,40	16
Bronze	Y12/YY12-J95	0,30	12
Carbide	—	—	—
Cast Iron	Y12/YY12-J95	0,13	5
Ceramic	—	—	—
Glass	—	—	—
Steel, Soft	Y12/YY12-J95	0,10	4
Steel, Hardened	Y12/YY12-J83	0,13	5

9,27mm - 12,52mm (.365"-.509")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low		High	
ASC-0375	9,53	3/8	9,27	.365	9,75	.384
ASC-0391	10	25/64	9,73	.383	10,21	.402
ASC-0406	10,32	13/32	10,06	.396	10,54	.415
ASC-0422	10,72	27/64	10,47	.412	10,95	.431
ASC-0438	11	7/16	10,82	.426	11,30	.445
ASC-0453	11,51	29/64	11,25	.443	11,74	.462
ASC-0469	12	15/32	11,71	.461	12,19	.480
ASC-0484	12,3	31/64	12,04	.474	12,52	.493
ASC-0500	12,7	1/2	12,45	.490	12,93	.509

* Special Order - Contact Customer Service

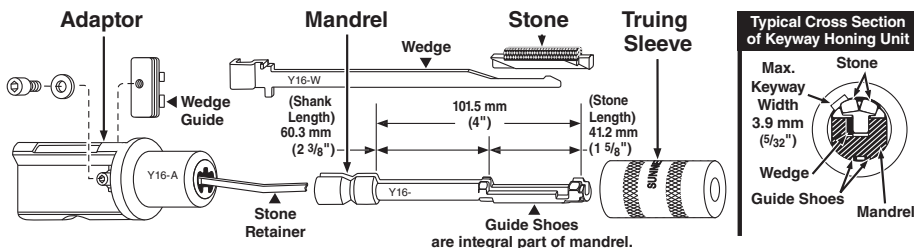
Y16

Keyway Honing Units

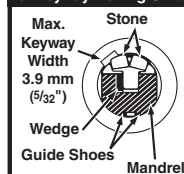
Diameter Range:

12,57 mm – 15,72 mm

.495" – .619"



Typical Cross Section of Keyway Honing Unit



Order 1-5 For Complete Y16 Keyway Honing Units

Diameter Range 12,57 mm - 15,72 mm .495" - .619"		1 Y16 Mandrel	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
		Includes wedge With Standard Shank		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
mm	inches	Choose One Suffix				
12,57-13,36	.495-.526	Y16-495B	S	H	B*	S-495
13,36-14,15	.526-.557	Y16-526B	S	H	B*	S-526
14,15-14,94	.557-.588	Y16-557B	S	H	B*	S-557
14,94-15,72	.588-.619	Y16-588B	S	H	B*	S-588
				Y16-A	C-495	
				Y16-A	C-526	
				Y16-A	C-557	
				Y16-A	C-588	

See All
Stone
Tables
At Right

Y16 Mandrel Replacement Parts

Y16-W	Wedge Replace when wear <i>begins</i> to show
LN-3686A	Stone Retainer
LN-3217A	Wedge Guide

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.
+ = Special Order. Contact Customer Service.

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service for price and availability.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

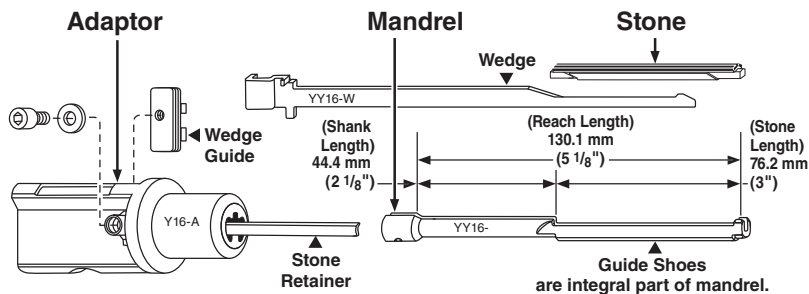
YY16

Keyway Honing Units

Diameter Range:

12,57 mm – 15,72 mm

.495" – .619"



Order 1-5 For Complete YY16 Keyway Honing Units

Diameter Range 12,57 mm - 15,72 mm .495" - .619"		1 YY16 Mandrel†	2 Truing Sleeve	3 Adapter	4 Alignment Bushing	5 Honing Stone
		Includes wedge With Standard Shank		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
mm	inches	Choose One Suffix				
12,57-13,36	.495-.526	YY16-495B	S*	H*	S-495	
13,36-14,15	.526-.557	YY16-526B	S*	H*	S-526	
14,15-14,94	.557-.588	YY16-557B	S*	H*	S-557	
14,94-15,72	.588-.619	YY16-588B	S*	H*	S-588	
				Y16-A	C-495	
				Y16-A	C-526	
				Y16-A	C-557	
				Y16-A	C-588	

See All
Stone
Tables
At Right

YY16 Mandrel Replacement Parts

YY16-W	Wedge Replace when wear <i>begins</i> to show
LN-3686A	Stone Retainer
LN-3217A	Wedge Guide

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel with hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
† = Not available in bronze.
+ = Special Order. Contact Customer Service.

YY16 Mandrels are similar to Y16 Mandrels except stone length is 76.2 mm (3"). Use only when bore length or interruptions will not allow holes to be honed properly with standard Y16 Mandrels.

Y16 & YY16

Keyway Honing Units

Superabrasive Stone Inserted Guide Shoe Mandrels⁺

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Extended Shank Mandrels⁺

Available for honing parts that are too long to be honed with a standard mandrel.

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Tandem "In-Line" Mandrels⁺

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

CBN and Diamond Stones for Keyway Mandrels⁺

These Stones consist of a single stone mounted centrally in a metal holder.

		All Available Stones										
		Grit Size										
		70	80	100	150	220	280	320	400	500	600	1200
Hard-- --Soft		Aluminum Oxide Stones (A) - Y16/12 per box, YY16/1 per box										
					Y16-A45	Y16-A55	Y16-A63					
					Y16-A49	Y16-A57	Y16-A65					
Hard-- --Soft		Silicon Carbide Stones (J,C) - Y16/12 per box, YY16/1 per box										
						Y16-J55	Y16-J63		Y16-J83			
						Y16-J57	Y16-J65		Y16-J85	Y16-J95		
Hard-- --Soft		Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box										
						Y16-NM55			Y16-NM85			
						Y16-NM57						

Recommended Stones for Y16/YY16 Mandrels

Material	Stone to use	Low-Volume		Stone to use	High-Volume	
		Approx. R _a Surface Finish µm	µin		Approx. R _a Surface Finish µm	µin
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	Y16-YY16-J57	1,38	55	—	1,25	50
Brass, Soft	Y16-YY16-J63	0,83	33	Y16/YY16-J63	0,83	33
Bronze	Y16-YY16-J57	1,38	55	Y16/YY16-J57	1,38	55
Carbide	—	—	—	—	0,50	20
Cast Iron	Y16-YY16-J57	0,50	20	—	2,00	80
Ceramic	—	—	—	—	1,00	40
Glass	—	—	—	—	1,75	70
Steel, Soft	Y16-YY16-A57	0,65	25	—	1,25	50
Steel, Hardened*	Y16-YY16-A55	0,45	18	—	1,00	40
Steel, Hardened**	Y16-YY16-A63	0,30	12	—	—	—
Fine finishing: previously honed holes						
Aluminum	Y16-YY16-J95	0,30	12	—	0,83	33
Brass, Soft	Y16-YY16-J83	0,40	16	Y16/YY16-J83	0,40	16
Bronze	Y16-YY16-J95	0,30	12	Y16/YY16-J95	0,30	12
Carbide	—	—	—	—	0,08	3
Cast Iron	Y16-YY16-J95	0,13	5	—	0,13	5
Ceramic	—	—	—	—	0,38	15
Glass	—	—	—	—	0,38	15
Steel, Soft	Y16-YY16-J95	0,10	4	—	0,40	16
Steel, Hardened	Y16-YY16-J83	0,13	5	—	0,18	7

* 1st choice
** 2nd choice.
Use if A55 does not cut.



Automatic Size Control Probes

12,45mm -16,10mm (.490"-.634")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

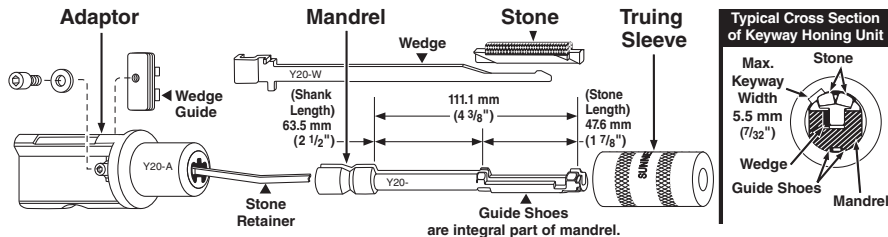
Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-0500	12,7	1/2	12,45	.490	12,93	.509
ASC-0516	13	33/64	12,83	.505	13,31	.524
ASC-0531	13,50	17/32	13,23	.521	13,72	.540
ASC-0547	14	35/64	13,72	.540	14,20	.559
ASC-0562	14,29	9/16	14,02	.552	14,50	.571
ASC-0578	14,68	37/64	14,43	.568	14,91	.587
ASC-0594	15	19/32	14,81	.583	15,29	.602
ASC-0609	15,48	39/64	15,22	.599	15,70	.618
ASC-0625	15,88	5/8	15,62	.615	16,10	.634

* Special Order - Contact Customer Service

Y20

Keyway Honing Units

Diameter Range:
15,72 mm – 19,68 mm
.619" – .775"



Order 1-5 For Complete Y20 Keyway Honing Units

Diameter Range 15,72 mm - 19,68 mm .619" - .775"		1 Y20 Mandrel Includes wedge				2 Truing Sleeve		3 Adapter		4 Alignment Bushing		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix				With stone retainer and wedge guide		For machines with fully adjustable spindle nose					
15,72-16,51	.619-.650	Y20-619B	S	H	B+	S-619	Y20-A	C-619				See All Stone Tables At Right	
16,51-17,30	.650-.681	Y20-650B	S	H	B+	S-650	Y20-A	C-650					
17,30-18,11	.681-.713	Y20-681B	S	H	B+	S-681	Y20-A	C-681					
18,11-18,90	.713-.744	Y20-713B	S	H	B+	S-713	Y20-A	C-713					
18,90-19,68	.744-.775	Y20-744B	S	H	B+	S-744	Y20-A	C-750					

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.

Y20 Mandrel Replacement Parts

Y20-W Wedge Replace when wear *begins* to show
LN-3688A Stone Retainer
LN-3218A Wedge Guide

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

CBN and Diamond Stones for Keyway Mandrels+

These Stones consist of a single stone mounted centrally in a metal holder.

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

+ Special Order - Contact Customer Service

Y20

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

All Available Stones												
		Grit Size										
		70	80	100	150	220	280	320	400	500	600	1200
Soft	Hard-----	Aluminum Oxide Stones (A) - 12 per box										
					Y20-A45 Y20-A47 Y20-A49	Y20-A55 Y20-A57	Y20-A63 Y20-A65 Y20-A67					
Soft	Hard---Soft	Silicon Carbide Stones (J,C) - 12 per box										
					Y20-J47	Y20-J57	Y20-J63 Y20-J65 Y20-J67		Y20-J83 Y20-J85 Y20-J87	Y20-J95 Y20-J97	Y20-C05†	
Soft	Hard-Soft	Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box										
						Y20-NM55 Y20-NM57			Y20-NM85			

Recommended Stones for Y20 Mandrels

Material	Stone to use	Low-Volume		Stone to use	High-Volume	
		Approx. R _a Surface Finish µm	µin		Approx. R _a Surface Finish µm	µin
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	Y20-J57	1,38	55	—	1,25	50
Brass, Soft	Y20-J63	0,83	33	Y20-J63	0,83	33
Bronze	Y20-J57	1,38	55	Y20-J57	1,38	55
Carbide	—	—	—	—	0,50	20
Cast Iron	Y20-J57	0,50	20	—	2,00	80
Ceramic	—	—	—	—	1,00	40
Glass	—	—	—	—	1,75	70
Steel, Soft	Y20-A57	0,65	25	Y20-NM57	1,25	50
Steel, Hardened*	Y20-A55	0,45	18	Y20-NM57	1,00	40
Steel, Hardened**	Y20-A63	0,30	12	—	—	—
Fine finishing: previously honed holes						
Aluminum	Y16-YY16-J95	0,30	12	—	0,83	33
Brass, Soft	Y16-YY16-J83	0,40	16	Y20-J83	0,40	16
Bronze	Y16-YY16-J95	0,30	12	Y20-J95	0,30	12
Carbide	—	—	—	—	0,08	3
Cast Iron	Y16-YY16-J95	0,13	5	—	0,13	5
Ceramic	—	—	—	—	0,38	15
Glass	—	—	—	—	0,38	15
Steel, Soft	Y16-YY16-J95	0,10	4	—	0,40	16
Steel, Hardened	Y16-YY16-J83	0,13	5	—	0,18	7

* 1st choice

** 2nd choice.
Use if A55
does not cut.



Automatic Size Control Probes

15,62mm - 19,69mm (.615"-.775")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

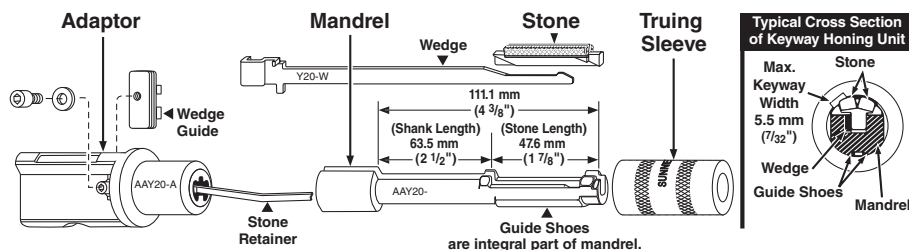
Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low		High	
ASC-0625	15,88	5/8	15,62	.615	16,10	.634
ASC-0630	16	—	15,75	.620	16,23	.639
ASC-0641	16,27	41/64	16,03	.631	16,51	.650
ASC-0656	16,67	21/32	16,41	.646	16,89	.665
ASC-0672	17	43/64	16,79	.661	17,27	.680
ASC-0688	17,46	11/16	17,22	.678	17,70	.697
ASC-0703	18	45/64	17,70	.697	18,19	.716
ASC-0719	18,26	23/32	18,01	.709	18,49	.728
ASC-0734	18,65	47/64	18,39	.724	18,87	.743
ASC-0750	19	3/4	18,80	.740	19,28	.759
ASC-0766	19,45	49/64	19,20	.756	19,69	.775

* Special Order - Contact Customer Service

AAAY20

Keyway Honing Units

Diameter Range:
19,69 mm – 25,25 mm
.775" – .994"



Order 1-5 For Complete AAY20 Keyway Honing Units

Diameter Range 19,69 mm - 25,25 mm .775" - .994"		1 AAY20 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter	4 Alignment Bushing†	5 Honing Stone
mm	inches	With Standard Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	See All Stone Tables At Right
19,68-20,47	.775-.806	AAY20-775B	S H B+	S-775	AAY20-A	C-750
20,47-21,29	.806-.838	AAY20-806B	S H B+	S-806	AAY20-A	C-750/C-812
21,29-22,07	.838-.869	AAY20-838B	S H B+	S-838	AAY20-A	C-812
22,07-22,86	.869-.900	AAY20-869B	S H B+	S-869	AAY20-A	C-812/C-875
22,86-23,65	.900-.931	AAY20-900B	S H B+	S-900	AAY20-A	C-875
23,65-24,43	.931-.962	AAY20-931B	S H B+	S-931	AAY20-A	C-875/C-937
24,43-25,25	.962-.994	AAY20-962B	S H B+	S-962	AAY20-A	C-937

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
B = Bronze Mandrel for very fine finishes and honing exotic metals.

† Alignment Bushing

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

AAAY20 Mandrel Replacement Parts

Y20-W Wedge Replace when wear *begins* to show
LN-3688A Stone Retainer
LN-3218A Wedge Guide

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

Extended Shank Mandrels+

Available for honing parts that are too long to be honed with a standard mandrel.

Tandem "In-Line" Mandrels+

Used to size two or more "In-Line" or tandem bores in perfect alignment. Special tandem mandrels can generally be supplied for those applications which have too long a tandem distance for honing with standard or altered mandrels. See page 12.4 for information on how to hone tandem bores.

CBN and Diamond Stones for Keyway Mandrels+

These Stones consist of a single stone mounted centrally in a metal holder.

† Special Order - Contact Customer Service

AAY20

Keyway Honing Units

Please contact Customer Service or your Sales & Application Engineer.

‡For best results, use with bronze guide shoes.

- * 1st choice
- ** 2nd choice.
Use if A55
does not cut.

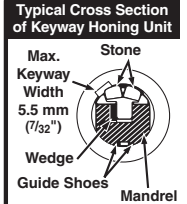
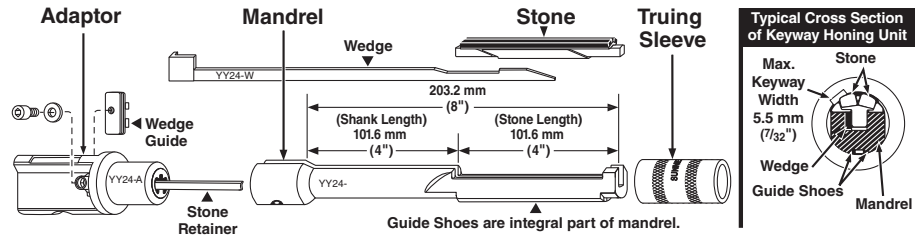
Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low		High	
	mm	in	mm	in	mm	in
ASC-0781	20	25/32	19.69	.775	20.17	.794
ASC-0797	20.24	51/64	19.99	.787	20.47	.806
ASC-0812	20.64	13/16	20.37	.802	20.85	.821
ASC-0828	21	53/64	20.78	.818	21.26	.837
ASC-0844	21.43	27/32	21.18	.834	21.67	.853
ASC-0859	22	55/64	21.67	.853	22.15	.872
ASC-0875	22.22	7/8	21.97	.865	22.45	.884
ASC-0891	22.62	57/64	22.38	.881	22.86	.900
ASC-0906	23	29/32	22.76	.896	23.24	.915
ASC-0922	23.42	59/64	23.17	.912	23.65	.931
ASC-0938	24	15/16	23.67	.932	24.16	.951
ASC-0953	24.21	61/64	23.95	.943	24.44	.962
ASC-0969	24.61	31/32	24.36	.959	24.84	.978
ASC-0984	25	63/64	24.69	.972	25.17	.991
ASC-1000	25.40	1	25.15	.990	25.63	1.010

2.63

YY24

Keyway Honing Units

Diameter Range:
15,72 mm – 25,25 mm
.619" – .994"



Order 1-5 For Complete YY24 Keyway Honing Units

Diameter Range 15,72 mm - 25,25 mm .619" - .994"		1 YY24 Mandrel† Includes wedge			2 Truing Sleeve		3 Adapter		4 Alignment Bushing‡		5 Honing Stone	
mm	inches	With Standard Shank Choose One Suffix				With stone retainer and wedge guide		For machines with fully adjustable spindle nose		See All Stone Tables At Right		
15,72-16,51	.619-.650	YY24-619B	-F16X	S -	S-619	YY24-A		C-619		YY24-	X393	
16,51-17,30	.650-.681	YY24-650B	-D56X	S H	S-650	YY24-A		C-650		YY24-		
17,30-18,11	.681-.713	YY24-681B	-D56X	S H	S-681	YY24-A		C-681		YY24-		
18,11-18,90	.713-.744	YY24-713B	-D56X	S H	S-713	YY24-A		C-713		YY24-		
18,90-19,68	.744-.775	YY24-744B		S H	S-744	YY24-A		C-750		YY24-		
19,68-20,47	.775-.806	YY24-775B		S H	S-775	YY24-A		C-750		YY24-		
20,47-21,29	.806-.838	YY24-806B		S H	S-806	YY24-A		C-750/C-812		YY24-		
21,29-22,07	.838-.869	YY24-838B		S H	S-838	YY24-A		C-812/C-875		YY24-		
22,07-22,86	.869-.900	YY24-869B		S H	S-869	YY24-A		C-875		YY24-		
22,86-23,65	.900-.931	YY24-900B		S H	S-900	YY24-A		C-875		YY24-		
23,65-24,43	.931-.962	YY24-931B		S H	S-931	YY24-A		C-875/C-937		YY24-		
24,43-25,25	.962-.994	YY24-962B		S H	S-962	YY24-A		C-937		YY24-		

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
† Not available in bronze.

† Alignment Bushing

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Please note that the YY24-____-X393 stones are on non-reusable holders.

YY24 Mandrel Replacement Parts

YY24-W-F16X

Wedge for YY24-619BS-F16X

YY24-W

Wedge for YY24-650B_-D56X thru YY24-962B_- Mandrels

LN-3687A

Stone Retainer

LN-3218A

Wedge Guide

Superabrasive Stone Inserted Guide Shoe Mandrels

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

CBN and Diamond Stones for Keyway Mandrels

Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

† Special Order - Contact Customer Service

YY24

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

All Available Stones											
			Grit Size								
			70	80	100	150	220	280	320	400	500 600 1200
Hard---Soft			Aluminum Oxide Stones (A) - 1 per box								
						YY24-A45 YY24-A47	YY24-A55 YY24-A57 YY24-A55X393 YY24-A57X393	YY24-A63 YY24-A65 YY24-A67			
Hard---Soft			Silicon Carbide Stones (J,C) - 1 per box								
						YY24-J57	YY24-J63 YY24-J65 YY24-J67 YY24-J65X393	YY24-J83 YY24-J85 YY24-J87 YY24-J83X393	YY24-J95 YY24-J95X393	YY24-J005	
Hard---Soft			Diamond (D) & CBN Stones (N) — Metal (M), Resin (R), Vitrified (V) Bond - 1 per box								
						YY24-NM57		YY24-NM85			

Recommended Stones for YY24 Mandrels

Material	Low-Volume		High-Volume	
	Stone to use	Approx. Ra Surface Finish µm µin	Stone to use	Approx. Ra Surface Finish µm µin
Fast removal: deburred, bored, ground, reamed holes				
Aluminum	YY24-J57	1,38 55	—	1,25 50
Brass, Soft	YY24-J63	0,83 33	YY24-J65	0,83 33
Bronze	YY24-J57	1,38 55	YY24-J57	1,38 55
Carbide	—	—	—	0,50 20
Cast Iron	YY24-J57	0,50 20	—	2,00 80
Ceramic	—	—	—	1,00 40
Glass	—	—	—	1,75 70
Steel, Soft	YY24-A57	0,65 25	—	1,25 50
Steel, Hardened*	YY24-A55	0,45 18	—	1,00 40
Steel, Hardened**	YY24-A63	0,30 12	—	—
Fine finishing: previously honed holes				
Aluminum	YY24-J95	0,30 12	—	0,83 33
Brass, Soft	YY24-J83	0,40 16	YY24-J83	0,40 16
Bronze	YY24-J95	0,30 12	YY24-J95	0,30 12
Carbide	—	—	—	0,08 3
Cast Iron	YY24-J95	0,13 5	—	0,13 5
Ceramic	—	—	—	0,38 15
Glass	—	—	—	0,38 15
Steel, Soft	YY24-J95	0,10 4	—	0,40 16
Steel, Hardened	YY24-J83	0,13 5	—	0,18 7

* 1st choice
** 2nd choice.
Use if A55 does not cut.



Automatic Size Control Probes

15,62mm - 25,63mm (.615"-1.010")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

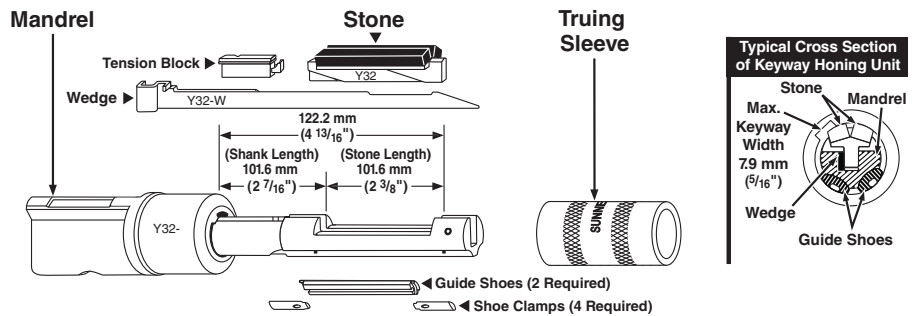
Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	Low in	High mm	High in
ASC-0625	15,88	5/8	15,62	.615	16,10	.634
ASC-0630	16	—	15,75	.620	16,23	.639
ASC-0641	16,27	41/64	16,03	.631	16,51	.650
ASC-0656	16,67	21/32	16,41	.646	16,89	.666
ASC-0672	17	43/64	16,79	.661	17,27	.680
ASC-0688	17,46	11/16	17,22	.678	17,70	.697
ASC-0703	18	45/64	17,70	.697	18,19	.716
ASC-0719	18,26	23/32	18,01	.709	18,49	.728
ASC-0734	18,65	47/64	18,39	.724	18,87	.743
ASC-0750	19	3/4	18,80	.740	19,28	.759
ASC-0766	19,45	49/64	19,20	.756	19,69	.775
ASC-0781	20	25/32	19,69	.775	20,17	.794
ASC-0797	20,24	51/64	19,99	.787	20,47	.806
ASC-0812	20,64	13/16	20,37	.802	20,85	.821
ASC-0828	21	53/64	20,78	.818	21,26	.837
ASC-0844	21,43	27/32	21,18	.834	21,67	.853
ASC-0859	22	55/64	21,67	.853	22,15	.872
ASC-0875	22,22	7/8	21,97	.865	22,45	.884
ASC-0891	22,62	57/64	22,38	.881	22,86	.900
ASC-0906	23	29/32	22,76	.896	23,24	.915
ASC-0922	23,42	59/64	23,17	.912	23,65	.931
ASC-0938	24	15/16	23,67	.932	24,16	.951
ASC-0953	24,21	61/64	23,95	.943	24,44	.962
ASC-0969	24,61	31/32	24,36	.959	24,84	.978
ASC-0984	25	63/64	24,69	.972	25,17	.991
ASC-1000	25,40	1	25,15	.990	25,63	1.010

* Special Order - Contact Customer Service

Y32

Keyway Honing Units

Diameter Range:
25,20 mm – 34,93 mm
.992" – 1.375"



Order 1-4 For Complete Y32 Keyway Honing Units

Diameter Range 25,20 mm - 34,93 mm .992" - 1.375"		1 Y32 Mandrel Supplied with a Y32-A Adapter and Wedge	2 Truing Sleeve	3 Alignment Bushing*	4 Honing Stone	Replacement Guide Shoes 2 required	
mm	inches	With Standard Shank		For machines with fully adjustable spindle nose		Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
25,20-26,97	.992-1.062	Y32-1000PB	S-994	C-1000	See All Stone Tables At Right	PB-B	PB-H
26,77-28,57	1.054-1.125	Y32-1062PB	S-1062	C-1062		PB-B	PB-H
28,37-30,15	1.117-1.187	Y32-1125PB	S-1125	C-1125		PB-B	PB-H
29,95-31,75	1.179-1.250	Y32-1187PC	S-1187	C-1187		PC-B	PC-H
31,55-33,32	1.242-1.312	Y32-1250PC	S-1250	C-1250		PC-B	PC-H
33,12-34,92	1.304-1.375	Y32-1312PC	S-1312	See note below		PC-B	PC-H

NOTES:
Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

Alignment Bushing Mandrel Options

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Superabrasive Stone Inserted Guide Shoes for situations where a longer life shoe is needed. (See NOTE below)
Contact Customer Service for price and availability.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

Y32 Mandrel Replacement Parts

Y32-W	Wedge Replace when wear <i>begins</i> to show
LN-1617A	Shoe Clamp Set For Mandrels with PB Suffix. 4 clamps with screws
LN-1627A	Shoe Clamp Set For Mandrels with PC Suffix. 4 clamps with screws
LN-1575A	Tension Block
LN-1545A	Set Screw Only (Pkg. of 2)

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels*

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

CBN and Diamond Stones for Keyway Mandrels

Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

* Special Order - Contact Customer Service

Y32

Keyway Honing Stones

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

All Available Stones

	Grit Size										
	70	80	100	150	220	280	320	400	500	600	1200
Har---Soft	Aluminum Oxide Stones (A) - 2 per box										
				Y32-A45 Y32-A47 Y32-A49	Y32-A55 Y32-A57 Y32-A59	Y32-A63 Y32-A65 Y32-A67					
Hard---Soft	Silicon Carbide Stones (J,C) - 2 per box										
				Y32-J45 Y32-J47	Y32-J55 Y32-J57	Y32-J63 Y32-J65 Y32-J67		Y32-J83 Y32-J85 Y32-J87	Y32-J95 Y32-J97		
Hard-Soft	Diamond (D) & Borazon/CBN Stones (N) — Metal (M), Resin (R), Vitriified (V) Bond - 1 per box										
					Y32-NM55 Y32-NM57			Y32-NM85			

Recommended Stones for Y32 Mandrels

Material	Low-Volume				High-Volume			
	Stone to use	Approx. R _a Surface Finish µm µin			Stone to use	Approx. R _a Surface Finish µm µin		
Fast removal: deburred, bored, ground, reamed holes								
Aluminum	Y32-J57	1,38	55		—	1,25	50	
Brass, Soft	Y32-J63	0,83	33		Y32-J63	0,83	33	
Bronze	Y32-J57	1,38	55		Y32-J57	1,38	55	
Carbide	—	—	—		—	0,50	20	
Cast Iron	Y32-J57	0,50	20		—	2,00	80	
Ceramic	—	—	—		—	1,00	40	
Glass	—	—	—		—	1,75	70	
Steel, Soft	Y32-A57	0,65	25		—	1,25	50	
Steel, Hardened*	Y32-A55	0,45	18		Y32-NM55	1,00	40	
Steel, Hardened**	Y32-A63	0,30	12		Y32-NM55	—	—	
Fine finishing: previously honed holes								
Aluminum	Y32-J95	0,30	12		—	0,83	33	
Brass, Soft	Y32-J83	0,40	16		Y32-J83	0,40	16	
Bronze	Y32-J95	0,30	12		Y32-J95	0,30	12	
Carbide	—	—	—		—	0,08	3	
Cast Iron	Y32-J95	0,13	5		—	0,13	5	
Ceramic	—	—	—		—	0,38	15	
Glass	—	—	—		—	0,38	15	
Steel, Soft	Y32-J95	0,10	4		—	0,40	16	
Steel, Hardened	Y32-J83	0,13	5		—	0,18	7	

* 1st choice
** 2nd choice. Use if A55 does not cut.



Automatic Size Control Probes

25,15mm - 38,00mm (.990"-1.500")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-1000	25,40	1	25,15	.990	25,63	1.010
ASC-1016	26	1-1/64	25,68	1.011	26,16	1.030
ASC-51§	—	—	26,00	1.000	32,00	1.250
ASC-52§	—	—	32,00	1.250	38,00	1.500

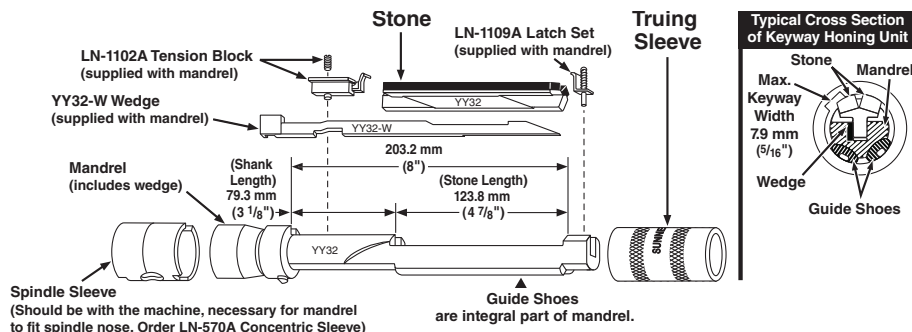
§ Requires the use of ASC-50 setting fixture. Specify ASC-50M for metric applications.

* Special Order - Contact Customer Service

YY32

Keyway Honing Units

Diameter Range:
25,25 mm – 31,50 mm
.994" – 1.240"



Order 1-4 For Complete YY32 Keyway Honing Units

Diameter Range 25,25 mm - 31,50 mm .994" - 1.240"		1 YY32 Mandrel Includes Wedge	2 Truing Sleeve	3 Alignment Bushing†	4 Honing Stone
mm	inches	Steel Mandrel with Standard Shank Choose One Suffix		For machines with fully adjustable spindle nose	See All Stone Tables At Right
25,25-26,04	.994-1.025	YY32-994B	S H	ST-1000	
26,04-26,82	1.025-1.056	YY32-1025B	S H	ST-1000	
26,82-27,64	1.056-1.088	YY32-1056B	S H	ST-1062	
27,64-28,42	1.088-1.119	YY32-1088B	S H	ST-1062	
28,42-29,21	1.119-1.150	YY32-1119B	S H	ST-1125	
29,21-30,00	1.150-1.181	YY32-1150B	S H	ST-1125	
30,00-30,78	1.181-1.212	YY32-1181B	S H	ST-1187	
30,78-31,50	1.212-1.240	YY32-1212B	S H	ST-1187	

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

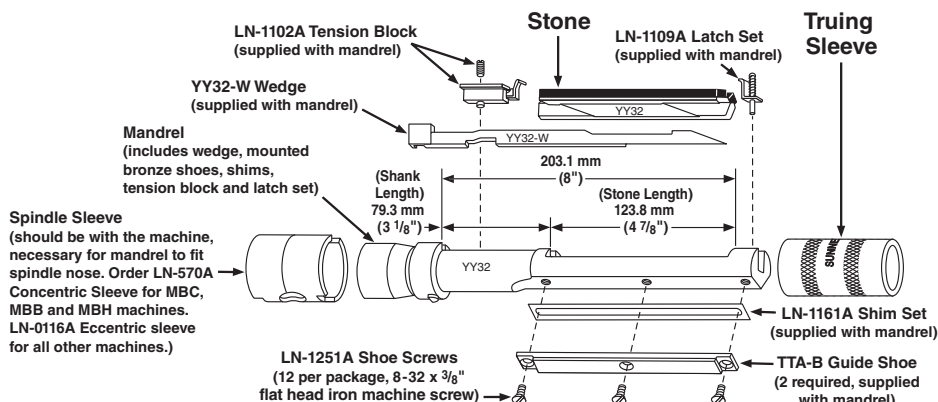
These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

† Alignment Bushings Mandrel Options

S = Steel Mandrel w/ soft shoes for honing most materials.
H = Steel Mandrel w/ hardened shoes for production honing or hard, rough parts, carbide, ceramic, glass.
Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

Diameter Range:
31,50 mm – 38,10 mm
1.240" – 1.500"



Order 1-5 For Complete YY32 Keyway Honing Units

Diameter Range 31,50 mm - 38,10 mm 1.240" - 1.500"		1 YY32 Mandrel Includes Wedge With Standard Shank	2 Truing Sleeve	3 Alignment Bushing†	4 Honing Stone	Replacement Guide Shoes 2 required	
mm	inches					Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
31,50-33,33	1.240-1.312	YY32-1250TTA	ST-1187 or ST-1250	C-1187/C-1250	See All Stone Tables At Right	TTA-B	TTA-H
33,07-34,93	1.302-1.375	YY32-1312TTA+	ST-1250 or ST-1300	See note above		TTA-B	TTA-H
34,67-36,50	1.365-1.437	YY32-1375TTA+	ST-1300 or ST-1375	—		TTA-B	TTA-H
36,25-38,10	1.427-1.500	YY32-1437TTA+	ST-1375	—		TTA-B	TTA-H

Truing Sleeve

Select the truing sleeve whose bore diameter is just under finish size.
Hone or bore this sleeve .127 mm (.005") from finish size.

† Alignment Bushings

Select the bushing whose bore diameter is just *under* finish size. When setting up the job for the first time, the undersize alignment bushing can be honed out to finish size with the same tooling used for honing the workpiece.

† Special Order - Contact Customer Service

YY32

Keyway Honing Units

YY32 Mandrel Replacement Parts

YY32-W	Wedge Replace when wear <i>begins</i> to show
LN-1102A	Tension Block
LN-1545A	Set Screw Only (pkg. of 2)
LN-1161A	Shim Set (pkg. of 4)
LN-1251A	Shoe Screws (pkg. of 12)
LN-1109A	Latch Set

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

Superabrasive Stone Inserted Guide Shoe Mandrels

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

CBN and Diamond Stones for Keyway Mandrels

Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

All Available Stones

	Grit Size									
	70	80	100	150	220	280	320	400	500	600 1200
Hard-----Soft	Aluminum Oxide Stones (A) - 1 per box									
					YY32-A55 YY32-A57	YY32-A67				
Hard---Soft	Silicon Carbide Stones (J,C) - 1 per box									
					YY32-J55 YY32-J57	YY32-J65 YY32-J67		YY32-J85	YY32-J95	

Recommended Stones for YY32 Mandrels

Material	Stone to use	Low-Volume		Stone to use	High-Volume	
		Approx. R _a Surface Finish µm	R _a µin		Approx. R _a Surface Finish µm	R _a µin
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	YY32-J57	1,38	55	—	1,25	50
Brass, Soft	YY32-J63	0,83	33	YY32-J63	0,83	33
Bronze	YY32-J57	1,38	55	YY32-J57	1,38	55
Carbide	—	—	—	—	0,50	20
Cast Iron	YY32-J57	0,50	20	—	2,00	80
Ceramic	—	—	—	—	1,00	40
Glass	—	—	—	—	1,75	70
Steel, Soft	YY32-A57	0,65	25	—	1,25	50
Steel, Hardened*	YY32-A55	0,45	18	—	1,00	40
Steel, Hardened**	YY32-A63	0,30	12	—	—	—
Fine finishing: previously honed holes						
Aluminum	YY32-J95	0,30	12	—	0,83	33
Brass, Soft	YY32-J83	0,40	16	YY32-J83	0,40	16
Bronze	YY32-J95	0,30	12	YY32-J95	0,30	12
Carbide	—	—	—	—	0,08	3
Cast Iron	YY32-J95	0,13	5	—	0,13	5
Ceramic	—	—	—	—	0,38	15
Glass	—	—	—	—	0,38	15
Steel, Soft	YY32-J95	0,10	4	—	0,40	16
Steel, Hardened	YY32-J83	0,13	5	—	0,18	7

* 1st choice
** 2nd choice.
Use if A55 does not cut.



Automatic Size Control Probes

25,15mm - 38,00mm (.990"-1.500")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on work-piece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Nominal Diameter		Diameter Range			
	mm	in	Low mm	in	High mm	in
ASC-1000	25,40	1	25,15	.990	25,63	1.010
ASC-1016	26	1-1/64	25,68	1.011	26,16	1.030
ASC-51§	—	—	26,00	1.000	32,00	1.250
ASC-52§	—	—	32,00	1.250	38,00	1.500

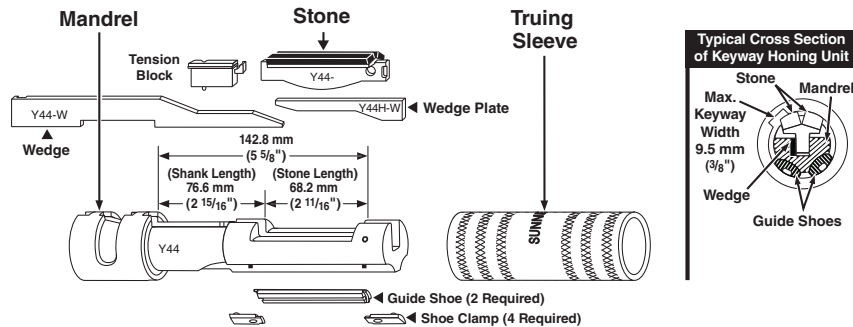
§ Requires the use of ASC-50 setting fixture. Specify ASC-50M for metric applications.

* Special Order - Contact Customer Service

Y44

Keyway Honing Units

Diameter Range:
34,67 mm – 44,45 mm
1.365" – 1.750"



Order 1-3 For Complete Y44 Keyway Honing Units

Diameter Range 34,67 mm - 44,45 mm 1.365" - 1.750"		1 Y44 Mandrel	2 Truing Sleeve	3 Honing Stone	Replacement Guide Shoes ^{2 required}	
mm	inches	With Standard Shank			Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
34,67-38,10	1.365-1.500	Y44-1375PD	ST-1375	See All Stone Tables At Right	PD-B	PD-H
37,85-41,28	1.490-1.625	Y44-1500PD	ST-1500		PD-B	PD-H
41,02-44,45	1.615-1.750	Y44-1625PD	ST-1625		PD-B	PD-H

Truing Sleeve

Select the truing sleeve whose bore diameter is just *under* finish size.
Hone or bore this sleeve .127mm (.005") from finish size.

Superabrasive Stone Inserted Guide Shoes are available where a longer life shoe is needed. Contact Customer Service for ordering information. (See NOTE below)

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

Y44 Mandrel Replacement Parts

Y44-W	Wedge Replace when wear <i>begins</i> to show
Y44L-W	Wedge Plate (Low)
Y44H-W	Wedge Plate (High)
LN-1637A	Shoe Clamp Set 4 clamps with screws
LN-1685A	Tension Block
LN-1545A	Set Screw Only (pkg. of 2)

CBN and Diamond Stones for Keyway Mandrels+ Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

+ Special Order - Contact Customer Service

Y44

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

All Available Stones											
	Grit Size										
	70	80	100	150	220	280	320	400	500	600	1200
Hard----Soft	Aluminum Oxide Stones (A) - 2 per box										
				Y44-A45	Y44-A55	Y44-A63					
				Y44-A47	Y44-A57	Y44-A65					
				Y44-A49		Y44-A67					
Hard-Soft	Silicon Carbide Stones (J,C) - 2 per box										
	Y44-J27			Y44-J45	Y44-J55	Y44-J63	Y44-J83	Y44-J95	Y44-C05		
				Y44-J47	Y44-J57	Y44-J65	Y44-J85				
						Y44-J67	Y44-J87				

Recommended Stones for Y44 Mandrels						
Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm µin		Stone to use	Approx. R _a Surface Finish µm µin	
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	Y44-J57	1,38 55		—	1,25 50	
Brass, Soft	Y44-J63	0,83 33		—	0,83 33	
Bronze	Y44-J57	1,38 55		Y44-J57	1,38 55	
Carbide	—	—		—	0,50 20	
Cast Iron	Y44-J57	0,50 20		—	2,00 80	
Ceramic	—	—		—	1,00 40	
Glass	—	—		—	1,75 70	
Steel, Soft	Y44-A57	0,65 25		—	1,25 50	
Steel, Hardened*	Y44-A55	0,45 18		—	1,00 40	
Steel, Hardened**	Y44-A63	0,30 12		—	—	
Fine finishing: previously honed holes						
Aluminum	Y44-J95	0,30 12		—	0,83 33	
Brass, Soft	Y44-J83	0,40 16		Y44-J83	0,40 16	
Bronze	Y44-J95	0,30 12		Y44-J95	0,30 12	
Carbide	—	—		—	0,08 3	
Cast Iron	Y44-J95	0,13 5		—	0,13 5	
Ceramic	—	—		—	0,38 15	
Glass	—	—		—	0,38 15	
Steel, Soft	Y44-J95	0,10 4		—	0,40 16	
Steel, Hardened	Y44-J83	0,13 5		—	0,18 7	

* 1st choice
** 2nd choice. Use if A55 does not cut.



Automatic Size Control Probes

32mm - 45mm (1.250"-1.750")

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

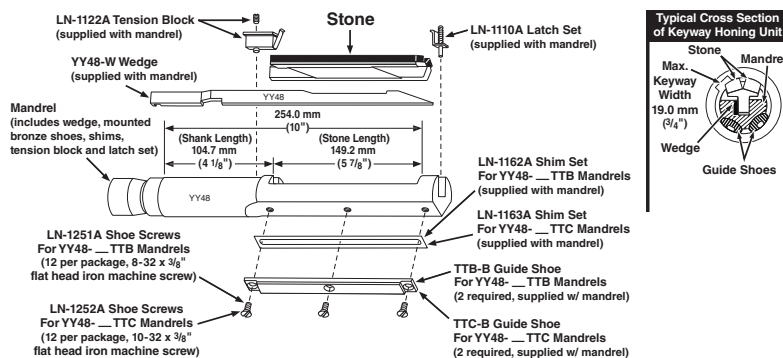
Sensing Tip Part No.	Diameter Range			
	Low mm	in	High mm	in
ASC-52§	32	1.250	38	1.500
ASC-53§	38	1.500	45	1.750

§ Requires the use of ASC-50 Setting Fixture. Specify ASC-50M for metric applications.

YY48

Keyway Honing Units

Diameter Range:
37,85 mm – 65,08 mm
1.490" – 2.562"



Order 1-3 For Complete YY48 Keyway Honing Units

Diameter Range 37,85 mm – 65,08 mm 1.490" – 2.562"		1 YY48 Mandrel	2 Truing Sleeve	3 Honing Stone	Replacement Guide Shoes 2 required	
mm	inches	With Standard Shank			Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
37,85-39,67	1.490-1.562	YY48-1500TTB	ST-1500	See All Stone Tables At Right	TTB-B	TTB-B-JQ6X+
39,42-41,28	1.552-1.625	YY48-1562TTB	ST-1500		TTB-B	TTB-B-JQ6X+
41,02-42,85	1.615-1.687	YY48-1625TTB	ST-1600		TTB-B	TTB-B-JQ6X+
42,60-44,45	1.677-1.750	YY48-1687TTB	ST-1600		TTB-B	TTB-B-JQ6X+
44,20-46,02	1.740-1.812	YY48-1750TTB	ST-1700		TTB-B	TTB-B-JQ6X+
45,77-47,63	1.802-1.875	YY48-1812TTB	ST-1700		TTB-B	TTB-B-JQ6X+
47,37-49,20	1.865-1.937	YY48-1875TTB	ST-1875		TTB-B	TTB-B-JQ6X+
48,95-50,80	1.927-2.000	YY48-1937TTB	ST-1875		TTB-B	TTB-B-JQ6X+
50,55-52,37	1.990-2.062	YY48-2000TTC	ST-2000		TTC-B	TTC-B-JQ6X+
52,12-53,98	2.052-2.125	YY48-2062TTC	ST-2000		TTC-B	TTC-B-JQ6X+
53,72-55,55	2.115-2.187	YY48-2125TTC	ST-2100		TTC-B	TTC-B-JQ6X+
55,30-57,15	2.177-2.250	YY48-2187TTC	ST-2100		TTC-B	TTC-B-JQ6X+
56,90-58,72	2.240-2.312	YY48-2250TTC	ST-2200		TTC-B	TTC-B-JQ6X+
58,47-60,33	2.302-2.375	YY48-2312TTC	ST-2200		TTC-B	TTC-B-JQ6X+
60,07-61,90	2.365-2.437	YY48-2375TTC	ST-2375		TTC-B	TTC-B-JQ6X+
61,65-63,50	2.427-2.500	YY48-2437TTC	ST-2375		TTC-B	TTC-B-JQ6X+
63,25-65,07	2.490-2.562	YY48-2500TTC	ST-2500		TTC-B	TTC-B-JQ6X+

Truing Sleeve

Select the truing sleeve whose bore diameter is just under finish size.
Hone or bore this sleeve .127mm (.005") from finish size.
Superabrasive Stone Inserted Guide Shoes are available for situations where a longer life shoe is needed. Contact Customer Service for ordering information.
(See NOTE below)

YY48 Mandrel Replacement Parts Sizes 37,85 - 50,80 (1.490" - 2.000")

YY48-WL Wedge
Replace when wear *begins* to show

LN-1162A Shim Set
LN-1251A Guide Shoe Screws
(12 per package)
LN-1122A Tension Block
LN-1545A Set Screw Only (pkg. of 2)
LN-1110A Latch Set

Sizes 50,55 - 65,07 (1.990" - 2.562")

YY48-WL Wedge
Replace when wear *begins* to show

LN-1163A Shim Set
LN-1252A Guide Shoe Screws
(12 per package)
LN-1122A Tension Block
LN-1545A Set Screw Only (pkg. of 2)
LN-1110A Latch Set

CBN and Diamond Stones for Keyway Mandrels

Metal Bond
These Stones consist of a single stone mounted centrally in a metal holder.

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

+ Special Order - Contact Customer Service

YY48

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

		All Available Stones									
		Grit Size									
Hardness		70	80	100	150	220	280	320	400	500	600 1200
		Aluminum Oxide Stones (A) - 1 per box									
Hard	Soft				YY48-A47 YY48-A49	YY48-A55 YY48-A57					
Hardness		Silicon Carbide Stones (J,C) - 1 per box									
					YY48-J45	YY48-J55 YY48-J57	YY48-J65 YY48-J67		YY48-J85 YY48-J87	YY48-J95	YY48-C05

*NOTE: Stone may have to be ground down slightly to fit into small diameter bore.

Recommended Stones for YY48 Mandrels						
Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish µm pin		Stone to use	Approx. R _a Surface Finish µm pin	
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	YY48-J57	1,38	55	—	1,25	50
Brass, Soft	YY48-J67	0,83	33	YY48-J67	0,83	33
Bronze	YY48-J57	1,38	55	YY48-J57	1,38	55
Carbide	—	—	—	—	0,50	20
Cast Iron	YY48-J57	0,50	20	—	2,00	80
Ceramic	—	—	—	—	1,00	40
Glass	—	—	—	—	1,75	70
Steel, Soft	YY48-A57	0,65	25	—	1,25	50
Steel, Hardened*	YY48-A55	0,45	18	—	1,00	40
Steel, Hardened**	YY48-A57	0,30	15	—	—	—
Fine finishing: previously honed holes						
Aluminum	YY48-J95	0,30	12	—	0,83	33
Brass, Soft	YY48-J83	0,40	16	YY48-J83	0,40	16
Bronze	YY48-J95	0,30	12	YY48-J95	0,30	12
Carbide	—	—	—	—	0,08	3
Cast Iron	YY48-J95	0,13	5	—	0,13	5
Ceramic	—	—	—	—	0,38	15
Glass	—	—	—	—	0,38	15
Steel, Soft	YY48-J95	0,10	4	—	0,40	16
Steel, Hardened	YY48-J83	0,13	5	—	0,18	7

* 1st choice
** 2nd choice. Use if A55 does not cut.



Automatic Size Control Probes

32mm - 51mm (1.250"-2.0")†

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Diameter Range			
	Low		High	
	mm	in	mm	in
ASC-52†	32	1.250	38	1.500
ASC-53†	38	1.500	45	1.750
ASC-54†	45	1.750	51	2.000

† Automatic size control probes not available above 51 mm (2.0").

‡ Requires the use of ASC-50 Setting Fixture. Specify ASC-50M for metric applications.

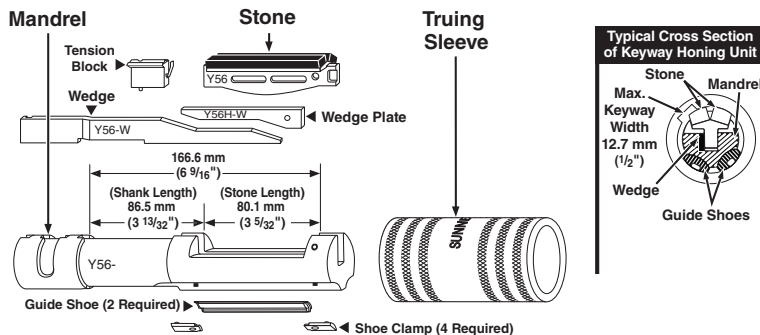
Y56

Keyway Honing Units

Diameter Range:

44,20 mm – 57,15 mm

1.740" – 2.250"



Order 1-3 For Complete Y56 Keyway Honing Units

Diameter Range 44,20 mm - 57,15 mm 1.740" - 2.250"		1 Y56 Mandrel	2 Truing Sleeve	3 Honing Stone	Replacement Guide Shoes ^{2 required}	
mm	inches	With Standard Shank			Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
44,20-47,63	1.740-1.875	Y56-1750PE	ST-1700	See All Stone Tables At Right	PE-B	PE-H
47,37-50,80	1.865-2.000	Y56-1875PE	ST-1875		PE-B	PE-H
50,55-53,98	1.990-2.125	Y56-2000PE	ST-2000		PE-B	PE-H
53,72-57,15	2.115-2.250	Y56-2125PE	ST-2100		PE-B	PE-H

Truing Sleeve

Select the truing sleeve whose bore diameter is just under finish size. Hone or bore this sleeve .127mm (.005") from finish size.

Superabrasive Stone Inserted Guide Shoes are available for situations where a longer life shoe is needed.

Contact Customer Service for price and availability. (See NOTE below)

Y56 Mandrel Replacement Parts

Y56-W	Wedge Replace when wear <i>begins</i> to show
Y56L-W	Wedge Plate (Low)
Y56H-W	Wedge Plate (High) Replace when wear <i>begins</i> to show
LN-1647A	Shoe Clamp Set 4 clamps with screws
LN-1337A	Tension Block
LN-1545A	Set Screw Only (pkg. of 2)

CBN and Diamond Stones for Keyway Mandrels⁺ Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels⁺

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

⁺ Special Order - Contact Customer Service

Y56

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

All Available Stones												
		Grit Size										
		70	80	100	150	220	280	320	400	500	600	1200
Hard-----Soft		Aluminum Oxide Stones (A) - 2 per box										
					Y56-A45	Y56-A55	Y56-A63 Y56-A65					
					Y56-A47	Y56-A57						
					Y56-A49	Y56-A59						
Hard--Soft		Silicon Carbide Stones (J,C) - 2 per box										
					Y56-J45 Y56-J47	Y56-J55 Y56-J57	Y56-J63 Y56-J65 Y56-J67		Y56-J83 Y56-J85 Y56-J87	Y56-J95 Y56-J97	Y56-C05	

Recommended Stones for Y56 Mandrels						
Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish μm μin		Stone to use	Approx. R _a Surface Finish μm μin	
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	Y56-J57	1,38 55		—	1,25 50	
Brass, Soft	Y56-J63	0,83 33		Y56-J63	0,83 33	
Bronze	Y56-J57	1,38 55		Y56-J57	1,38 55	
Carbide	—	—		—	0,50 20	
Cast Iron	Y56-J57	0,50 20		—	1,50 60	
Ceramic	—	—		—	1,00 40	
Glass	—	—		—	1,50 60	
Steel, Soft	Y56-A57	0,65 25		—	1,25 50	
Steel, Hardened*	Y56-A55	0,45 18		—	1,00 40	
Steel, Hardened**	Y56-A63	0,30 12		—	—	
Fine finishing: previously honed holes						
Aluminum	Y56-J95	0,30 12		—	0,83 33	
Brass, Soft	Y56-J83	0,40 16		Y56-J83	0,40 16	
Bronze	Y56-J95	0,30 12		Y56-J95	0,30 12	
Carbide	—	—		—	0,08 3	
Cast Iron	Y56-J95	0,13 5		—	0,13 5	
Ceramic	—	—		—	0,38 15	
Glass	—	—		—	0,38 15	
Steel, Soft	Y56-J95	0,10 4		—	0,40 16	
Steel, Hardened	Y56-J83	0,13 5		—	0,18 7	

* 1st choice
** 2nd choice. Use if A55 does not cut.



Automatic Size Control Probes

38mm - 51mm (1.500"-2.0")†

For use on machines with Automatic Size Control units. Select the appropriate Size Control Probe based on workpiece finish diameter. See page 8.4 for complete list of A.S.C. Sensing Tips.

Sensing Tip Part No.	Diameter Range			
	Low		High	
	mm	in	mm	in
ASC-53‡	38	1.500	45	1.750
ASC-54‡	45	1.750	51	2.000

† Automatic size control probes not available above 51 mm (2.0").

‡ Requires the use of ASC-50 Setting Fixture. Specify ASC-50M for metric applications.

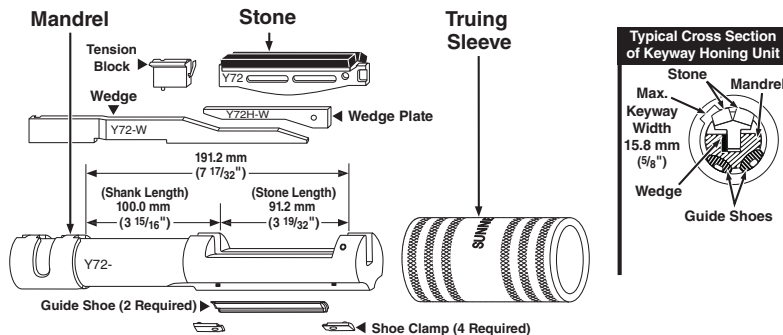
Y72

Keyway Honing Units

Diameter Range:

56,90 mm – 69,85 mm

2.240" – 2.750"



Order 1-3 For Complete Y72 Keyway Honing Units

Diameter Range 56,90 mm - 69,85 mm 2.240" - 2.750"		1 Y72 Mandrel	2 Truing Sleeve	3 Honing Stone	Replacement Guide Shoes 2 required	
mm	inches	With Standard Shank			Bronze General Purpose Furnished with Mandrel	Hardened Steel
56,90-60,32	2.240-2.375	Y72-2250PF	ST-2200	See All Stone Tables At Right	PF-B	PF-H
60,07-63,50	2.365-2.500	Y72-2375PF	ST-2375		PF-B	PF-H
63,25-66,27	2.490-2.625	Y72-2500PF	ST-2500		PF-B	PF-H
66,42-69,85	2.615-2.750	Y72-2625PF	ST-2625		PF-B	PF-H

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and ,127 mm (.005") under.

Truing Sleeve

Select the truing sleeve whose bore diameter is just under finish size. Hone or bore this sleeve ,127mm (.005") from finish size.

Superabrasive Stone Inserted Guide Shoes are available for situations where a longer life shoe is needed.

Contact Customer Service for price and availability. (See NOTE below)

Y72 Mandrel Replacement Parts

Y72-W	Wedge Replace when wear <i>begins</i> to show
Y72L-W	Wedge Plate (Low)
Y72H-W	Wedge Plate (High) Replace when wear <i>begins</i> to show
LN-1657A	Shoe Clamp Set 4 clamps with screws
LN-1337A	Tension Block
LN-1655A	Main Slot Wear Plate Not shown
LN-1545A	Set Screw Only (pkg. of 2)

CBN and Diamond Stones for Keyway Mandrels+ Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels+

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

+ Special Order - Contact Customer Service

Y72

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

* 1st choice
** 2nd choice.
Use if A55 does not cut.

All Available Stones										
	Grit Size									
	70	80	100	150	220	280	320	400	500	600 1200
Hard--Soft	Aluminum Oxide Stones (A) - 2 per box									
				Y72-A45 Y72-A47 Y72-A49	Y72-A55 Y72-A57	Y72-A63 Y72-A65				
Hard--Soft	Silicon Carbide Stones (J,C) - 2 per box									
				Y72-J47	Y72-J57	Y72-J65		Y72-J85 Y72-J87	Y72-J95	

Recommended Stones for Y72 Mandrels						
Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish µm pin		Stone to use	Approx. Ra Surface Finish µm pin	
Deburring: rough holes, all materials						
	Y72-A47	—	—	Y72-A47	—	—
Fast removal: deburred, ground, reamed holes						
Aluminum	Y72-J57	1,38	55	—	—	—
Brass, Soft	Y72-J65	0,83	33	Y72-J63	0,83	33
Bronze	Y72-J57	1,38	55	Y72-J57	1,38	55
Carbide	Y72-DM37	0,50	20	—	—	—
Cast Iron	Y72-J57	1,20	48	—	—	—
Ceramic	—	—	—	—	—	—
Glass	—	—	—	—	—	—
Steel, Soft	Y72-A57	0,65	25	—	—	—
Steel, Hardened*	Y72-A55	0,45	18	—	—	—
Steel, Hardened**	Y72-A63	0,30	12	—	—	—
Fine finishing: previously honed holes						
Aluminum	Y72-J95	0,30	12	—	0,83	33
Brass, Soft	Y72-J85	0,40	16	Y72-J85	0,40	16
Bronze	Y72-J95	0,30	12	Y72-J95	0,30	12
Carbide	Y72-DM05	0,08	3	—	0,08	3
Cast Iron	Y72-J95	0,13	5	—	0,13	5
Ceramic	—	—	—	—	0,38	15
Glass	—	—	—	—	0,38	15
Steel, Soft	Y72-J95	0,10	4	—	0,40	16
Steel, Hardened	Y72-J85	0,13	5	—	0,18	7

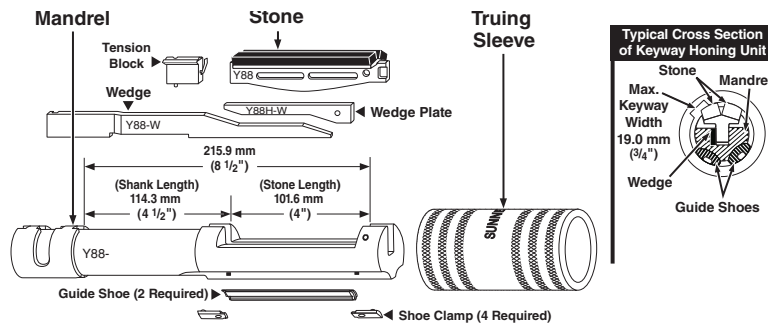
Y88

Keyway Honing Units

Diameter Range:

69,60 mm – 82,55 mm

2.740" – 3.250"



Order 1-3 For Complete Y88 Keyway Honing Units

Diameter Range 69,60 mm - 82,55 mm 2.740" - 3.250"		1 Y88 Mandrel	2 Truing Sleeve	3 Honing Stone	Replacement Guide Shoes ^{2 required}	
mm	inches	With Standard Shank			Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
69,60-73,02	2.740-2.875	Y88-2750PG	ST-2750	See All Stone Tables At Right	PG-B	PG-B-JQ6X ⁺
72,77-76,20	2.865-3.000	Y88-2875PG	ST-2875		PG-B	PG-B-JQ6X ⁺
75,95-79,37	2.990-3.125	Y88-3000PG	ST-3000		PG-B	PG-B-JQ6X ⁺
79,12-82,55	3.115-3.250	Y88-3125PG	ST-3125		PG-B	PG-B-JQ6X ⁺

Truing Sleeve

Select the truing sleeve whose bore diameter is just under finish size.
Hone or bore this sleeve .127mm (.005") from finish size.

Superabrasive Stone Inserted Guide Shoes are available for situations where a longer life shoe is needed. Contact Customer Service for price and availability.
(See NOTE below)

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

Y88 Mandrel Replacement Parts

Y88-W	Wedge Replace when wear <i>begins</i> to show
Y88L-W	Wedge Plate (Low)
Y88H-W	Wedge Plate (High) Replace when wear <i>begins</i> to show
LN-1667A	Shoe Clamp Set 4 clamps with screws
LN-1695A	Tension Block
LN-1545A	Set Screw Only (pkg. of 2)
LN-1665A	Main Slot Wear Plate Not shown

CBN and Diamond Stones for Keyway Mandrels⁺ Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels⁺

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

⁺ Special Order - Contact Customer Service

Y88

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

* 1st choice
** 2nd choice.
Use if A55 does not cut.

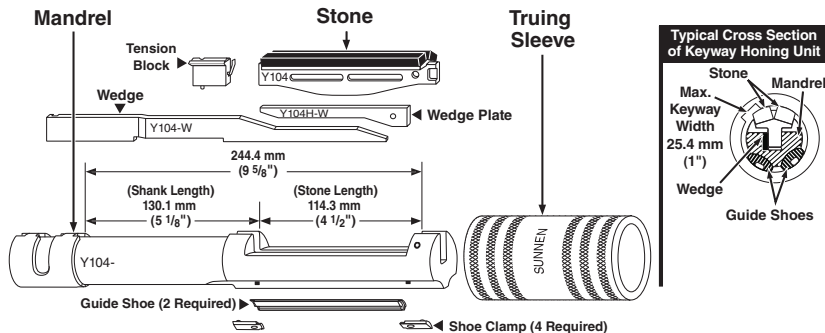
All Available Stones											
			Grit Size								
			70	80	100	150	220	280	320	400	500
Hard--Soft			Aluminum Oxide Stones (A) - 1 per box								
						Y88-A45	Y88-A55 Y88-A57	Y88-A63			
Hard--Soft			Silicon Carbide Stones (J,C) - 1 per box								
							Y88-J57			Y88-J85	Y88-J95

Recommended Stones for Y88 Mandrels						
Material	Low-Volume			High-Volume		
	Stone to use	Approx. R _a Surface Finish		Stone to use	Approx. R _a Surface Finish	
		µm	µin		µm	µin
Fast removal: deburred, ground, reamed holes						
Aluminum	Y88-J57	1,38	55	—	—	—
Brass, Soft	Y88-J63	0,83	33	—	—	—
Bronze	Y88-J57	1,38	55	Y88-J57	1,38	55
Carbide	—	—	—	—	—	—
Cast Iron	Y88-J57	0,50	20	—	—	—
Ceramic	—	—	—	—	—	—
Glass	—	—	—	—	—	—
Steel, Soft	Y88-A57	0,65	25	—	—	—
Steel, Hardened*	Y88-A55	0,45	18	—	—	—
Steel, Hardened**	Y88-A63	0,30	12	—	—	—
Fine finishing: previously honed holes						
Aluminum	Y88-J95	0,30	12	—	0,83	33
Brass, Soft	Y88-J85	0,40	16	Y88-J83	0,40	16
Bronze	Y88-J95	0,30	12	Y88-J95	0,30	12
Carbide	—	—	—	—	0,08	3
Cast Iron	Y88-J95	0,13	5	—	0,13	5
Ceramic	—	—	—	—	0,38	15
Glass	—	—	—	—	0,38	15
Steel, Soft	Y88-J95	0,10	4	—	0,40	16
Steel, Hardened	Y88-J85	0,13	5	—	0,18	7

Y104

Keyway Honing Units

Diameter Range:
82,30 mm – 98,42 mm
3.240" – 3.875"



Order 1-3 For Complete Y104 Keyway Honing Units

Diameter Range 82,30 mm - 98,42 mm 3.240" - 3.875"		1 Y88 Mandrel	2 Truing Sleeve	3 Honing Stone	Replacement Guide Shoes ^{2 required}	
mm	inches	With Standard Shank			Bronze General Purpose Furnished with Mandrel	Hardened Steel For hard, rough parts or carbide, ceramic, etc. Order Separately
82,30-85,72	3.240-3.375	Y104-3250PH	ST-3250	See All Stone Tables At Right	PH-B	PH-B-JQ6X ⁺
85,47-88,90	3.365-3.500	Y104-3375PH	ST-3375		PH-B	PH-B-JQ6X ⁺
88,65-92,07	3.490-3.625	Y104-3500PH	ST-3500		PH-B	PH-B-JQ6X ⁺
91,82-95,25	3.615-3.750	Y104-3625PH	ST-3625		PH-B	PH-B-JQ6X ⁺
95,00-98,42	3.740-3.875	Y104-3750PH	ST-3750		PH-B	PH-B-JQ6X ⁺

Truing Sleeve

Select the truing sleeve whose bore diameter is just under finish size.
Hone or bore this sleeve .127mm (.005") from finish size.

Superabrasive Stone Inserted Guide Shoes are available for situations where a longer life shoe is needed. Contact Customer Service for price and availability.
(See NOTE below)

NOTES: Standard Keyway Mandrels not suitable for blind holes. Blind Hole Keyway Mandrels and Stones are available on special order basis. Contact Customer Service.

These honing units are designed to be used for honing bores with keyways, splines, ports and other surface interruptions.

Keyway Mandrels *must* be trued accurately to keep the honing stone from hanging up in the keyway. Size Truing Sleeve to a diameter between the desired finish bore size and .127 mm (.005") under.

Y104 Mandrel Replacement Parts

Y104-W	Wedge Replace when wear <i>begins</i> to show
Y104L-W	Wedge Plate (Low)
Y104H-W	Wedge Plate (High) Replace when wear <i>begins</i> to show
LN-1677A	Shoe Clamp Set 4 clamps with screws
LN-1695A	Tension Block
LN-1545A	Set Screw Only (pkg. of 2)
LN-1665A	Main Slot Wear Plate Not shown

CBN and Diamond Stones for Keyway Mandrels⁺

Metal Bond

These Stones consist of a single stone mounted centrally in a metal holder.

NOTE:

Superabrasive Stone Inserted Guide Shoe Mandrels⁺

For applications where a long lasting mandrel is needed and the material being honed reacts negatively with a hardened mandrel. Made from a bronze mandrel. Single or double insert mandrels in either CBN or diamond are available.

⁺ Special Order - Contact Customer Service

Y104

Keyway Honing Units

In some cases, stones other than the RECOMMENDED STONES may hone faster or last longer. For long or repetitive production runs, it may be economical to choose a stone slightly harder or softer, coarser or finer. As a general rule, hard materials require soft stones; soft materials require hard stones; rough holes require hard stones.

Additional abrasive specifications available to hone difficult materials.

Please contact Customer Service or your Sales & Application Engineer.

* 1st choice
** 2nd choice.
Use if A55 does not cut.



All Available Stones										
Hard--Soft	Grit Size									
	70	80	100	150	220	280	320	400	500	600 1200
	Aluminum Oxide Stones (A) & Silicon Carbide (J)									
				Y104-A47	Y104-A57	Y104-A63 Y104-J63 Y104-J67			Y104-J95	

Recommended Stones for Y88 Mandrels						
Material	Low-Volume			High-Volume		
	Stone to use	Approx. Ra Surface Finish µm µin		Stone to use	Approx. Ra Surface Finish µm µin	
Fast removal: deburred, bored, ground, reamed holes						
Aluminum	Y104-J63	1,85 55		—	—	—
Brass, Soft	Y104-J63	0,85 33		Y104-J63	0,83 33	
Bronze	Y104-J63	0,85 33		Y104-J63	0,85 33	
Carbide	—	—	—	—	0,50 20	
Cast Iron	—	—	—	—	—	—
Ceramic	—	—	—	—	—	—
Glass	—	—	—	—	—	—
Steel, Soft	Y104-A47	0,95 38		—	1,25 50	
Steel, Hardened*	Y104-A47	0,50 20		—	1,00 40	
Steel, Hardened**	Y104-A57	0,45 18		—	—	—
Fine finishing: previously honed holes						
Aluminum	Y104-J95	0,30 12		—	0,83 33	
Brass, Soft	Y104-J95	0,30 12		Y104-J95	0,30 12	
Bronze	Y104-J95	0,30 12		Y104-J95	0,30 12	
Carbide	—	—	—	—	0,08 3	
Cast Iron	Y104-J95	0,13 5		—	0,13 5	
Ceramic	—	—	—	—	0,38 15	
Glass	—	—	—	—	0,38 15	
Steel, Soft	Y104-J95	0,10 4		—	—	—
Steel, Hardened	Y104-J95	0,08 3		—	—	—

HONING UNIT
SELECTION GUIDE

PEDESTAL MACHINES
(ML, EC, MBB, & LBB)

PLATED TOOLING
(KGM & VSS MACHINES)

CYLINDER HONING
(SV-410 & SV-10 MACHINES)

PORTABLE, MP3 & TUBE
HONE ABRASIVES

CUSTOM ABRASIVES
& TOOLING

M Series

Mandrel Sets

The Easy Way To Order

Buying in sets, using a single part number, simplifies ordering and assures having the right Honing Unit needed for the job at hand. Each set covers a particular size range.

Each Honing Unit is supplied with a wedge and adapter. A truing sleeve is included for each Honing Unit.

You also save money, compared to list price of individual items, by ordering Mandrel Sets.

The Mandrel Units and Stone Assortments are sold separately.

NOTE: Components not assembled

Diameter Range:

1,52 mm – 2,03 mm
{.060" – .080"}



MLS-260S (Soft) or MLS-260H (Hardened) Mandrel Unit

10 Honing Units D2A-060 through D2E-078

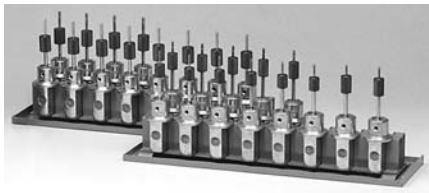
1 SL-30 Mandrel Rack

SLN-60 Stone Assortment consists of 12 each of the following stones:

24	D6A65	Stones	12	D6J67	Stones
12	D6A67	Stones	12	D6J93	Stones
12	D6J65	Stones	12	D6J97	Stones

Diameter Range:

3,05 mm – 6,22 mm
{.120" – .245"}



MLS-125S (Soft) or MLS-125H (Hardened) Mandrel Unit

25 Honing Units

K4-120 thru K4-145

K6-185 thru K6-240

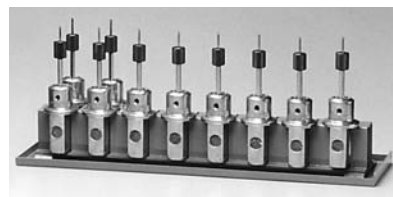
K5-150 thru K5-180

2 SL-30 Mandrel Racks

SLN-125 Stone Assortment consists of 12 each of the following stones:

12	K4A63	Stones	12	K5J63	Stones
12	K4A65	Stones	12	K5J67	Stones
12	K4A67	Stones	12	K5J83	Stones
12	K4A69	Stones	12	K5J95	Stones
12	K4J65	Stones	12	K6A413	Stones
12	K4J67	Stones	12	K6A55	Stones
12	K4J85	Stones	12	K6A57	Stones
12	K4J95	Stones	12	K6A63	Stones
12	K5A63	Stones	12	K6J57	Stones
12	K5A65	Stones	12	K6J63	Stones
12	K5A67	Stones	12	K6J83	Stones
12	K5A69	Stones	12	K6J95	Stones

Diameter Range:
2,54 mm – 3,05 mm
{.100" – .120"}



MLS-100S (Soft) or MLS-100H (Hardened) Mandrel Unit

10 Honing Units K3-100 through K3-118

1 SL-30 Mandrel Rack

SLN-100 Stone Assortment consists of 12 each of the following stones:

24	K3A65	Stones	12	K3J65	Stones
12	K3A67	Stones	12	K3J67	Stones
12	K3A69	Stones	12	K3J85	Stones
			12	K3J95	Stones

Diameter Range:

2,03 mm – 2,54 mm
{.080" – .100"}



MLS-280S (Soft) or MLS-280H (Hardened) Mandrel Unit

10 Honing Units D2F-080 through D2F-098

1 SL-30 Mandrel Rack

SLN-80 Stone Assortment consists of 12 each of the following stones:

24	D8A65	Stones	12	D8J67	Stones
12	D8A67	Stones	12	D8J97	Stones
12	D8J65	Stones	12	D8J95	Stones

Diameter Range:

6,22 mm – 18,90 mm
{.245" – .744"}



MLS-250S (Soft) or MLS-250H (Hardened) Mandrel Unit

36 Honing Units

K8-245 thru K8-300

K16-495 thru K16-588

K10-308 thru K10-362

K20-619 thru K20-713

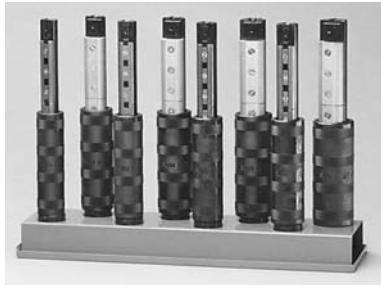
K12-370 thru K12-479

3 SL-30 Mandrel Racks

SLN-250 Stone Assortment consists of 12 each of the following stones:

12	K10A413	Stones	12	K16J57	Stones
12	K10A55	Stones	12	K16J63	Stones
12	K10A57	Stones	12	K16J83	Stones
12	K10A63	Stones	12	K16J95	Stones
12	K10J57	Stones	12	K20A413	Stones
12	K10J63	Stones	12	K20A55	Stones
12	K10J83	Stones	12	K20A57	Stones
12	K10J95	Stones	12	K20A63	Stones
12	K12A413	Stones	12	K20J57	Stones
12	K12A55	Stones	12	K20J63	Stones
12	K12A57	Stones	12	K20J83	Stones
12	K12A63	Stones	12	K20J95	Stones
12	K12J57	Stones	12	K8A413	Stones
12	K12J63	Stones	12	K8A55	Stones
12	K12J83	Stones	12	K8A57	Stones
12	K12J95	Stones	12	K8A63	Stones
12	K16A413	Stones	12	K8J57	Stones
12	K16A55	Stones	12	K8J63	Stones
12	K16A57	Stones	12	K8J83	Stones
12	K16A63	Stones	12	K8J95	Stones

Diameter Range:
25,15 mm – 44,45 mm
{.990" – 1.750"}



MLS-1000 Mandrel Unit

- 8 Honing Units
- 2G-P28-1000VA through 2G-P28-1625WD
- 1 SL-38 Mandrel Rack
- 1 2G-R28 Blind Hole Wedge
- 1 LN-570A Concentric Sleeve

SLN-1000 Stone Assortment consists of 12 each of the following stones:

12	P28A413	Stones	12	R28A413	Stones
12	P28A55	Stones	12	R28A55	Stones
12	P28A57	Stones	12	R28A57	Stones
12	P28A63	Stones	12	R28A63	Stones
12	P28J57	Stones	12	R28J57	Stones
12	P28J63	Stones	12	R28J63	Stones
12	P28J83	Stones	12	R28J83	Stones
12	P28J95	Stones	12	R28J95	Stones

Diameter Range:
1/4" – 1.031" {Fractional
Sizes Only}



MLS-25S (Soft) or MLS-25H (Hardened) Mandrel Unit

Order M-25S for honing most materials including hard steels; order M-25H for rough holes and very hard materials.

21 Honing Units		
1 K8-245	1 K12-370	1 AK20-744UA
1 K8-260	1 K12-400	1 AK20-806UB
1 K8-275	1 K12-432	1 AK20-869UB
1 K8-290	1 K12-463	1 AK20-931UC
1 K10-308	1 K16-495	1 AK20-994UC
1 K10-323	1 K16-557	2 SL-30 Mandrel Racks
1 K10-339	1 K20-619	
1 K10-354	1 K20-681	

SLN-250 Stone Assortment consists of 12 each of the following stones:

12	K10A413	Stones	12	K16J57	Stones
12	K10A55	Stones	12	K16J63	Stones
12	K10A57	Stones	12	K16J83	Stones
12	K10A63	Stones	12	K16J95	Stones
12	K10J57	Stones	12	K20A413	Stones
12	K10J63	Stones	12	K20A55	Stones
12	K10J83	Stones	12	K20A57	Stones
12	K10J95	Stones	12	K20A63	Stones
12	K12A413	Stones	12	K20J57	Stones
12	K12A55	Stones	12	K20J63	Stones
12	K12A57	Stones	12	K20J83	Stones
12	K12A63	Stones	12	K20J95	Stones
12	K12J57	Stones	12	K8A413	Stones
12	K12J63	Stones	12	K8A55	Stones
12	K12J83	Stones	12	K8A57	Stones
12	K12J95	Stones	12	K8A63	Stones
12	K16A413	Stones	12	K8J57	Stones
12	K16A55	Stones	12	K8J63	Stones
12	K16A57	Stones	12	K8J83	Stones
12	K16A63	Stones	12	K8J95	Stones

M Series Mandrel Sets

Diameter Range:
43,94 mm – 66,68 mm
{1.730" – 2.625"}



MLS-1750 Mandrel Unit

Assembled for open hole work—all necessary items included to convert units for blind hole work.

- 7 Honing Units
 - 1 2G-P28-1750WE
 - 1 2H-P28-1875WE
 - 1 2H-P28-2000WF
 - 1 2H-P28-2125WF
 - 1 2G-R28 Blind Hole Wedge
 - 1 2H-R28 Blind Hole Wedge
 - 1 SL-37 Mandrel Rack
- 1 2H-P28-2250WF
- 1 2H-P28-2375WG
- 1 2H-P28-2500WG

SLN-1000 Stone Assortment consists of 12 each of the following stones:

12	P28A413	Stones	12	R28A413	Stones
12	P28A55	Stones	12	R28A55	Stones
12	P28A57	Stones	12	R28A57	Stones
12	P28A63	Stones	12	R28A63	Stones
12	P28J57	Stones	12	R28J57	Stones
12	P28J63	Stones	12	R28J63	Stones
12	P28J83	Stones	12	R28J83	Stones
12	P28J95	Stones	12	R28J95	Stones

Diameter Range:
18,90 mm – 26,19 mm
{.744" – 1.031"}



MLS-744 Mandrel Unit

- 9 Honing Units AK20-744UA through AK20-944UC
- 1 SL-30 Mandrel Rack

SLN-744 Stone Assortment consists of 12 each of the following stones:

12	K20A413	Stones	12	K20J57	Stones
12	K20A55	Stones	12	K20J63	Stones
12	K20A57	Stones	12	K20J83	Stones
12	K20A63	Stones	12	K20J95	Stones

Mandrel Storage Racks

SL-30

For Mandrels requiring separate adapters. Each rack holds 16 honing units. Includes drain pan.



SL-38

For lifetime honing units with 38,1 mm (1-1/2") diameter shank. Rack holds 8 units. Includes drain pan.



SL-37

For lifetime honing units with 44,4 mm (1-3/4") diameter shank. Rack holds 7 units. Includes drain pan.



SRT Multi-Stone Hone Head

For Diameter Range

Stone Set	SRT-1375		SRT-1500		SRT-1600		SRT-2000		SRT-2530		SRT-3000	
	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
SRT00-XXXX	34.9-36.5	1.375-1.438	—	—	—	—	—	—	—	—	—	—
SRT0-XXXX	36.5-38.1	1.438-1.500	—	—	—	—	—	—	—	—	—	—
SRT1-XXXX	38.1-40.1	1.500-1.580	38.1-40.1	1.500-1.580	41.1-42.7	1.600-1.680	51.3-52.8	2.000-2.080	64.7-66.3	2.530-2.610	64.7-66.3	2.530-2.610
SRT2-XXXX	40.1-42.2	1.580-1.660	40.1-42.2	1.580-1.660	42.7-44.7	1.680-1.760	52.8-54.9	2.080-2.160	66.3-68.3	2.610-2.690	66.3-68.3	2.610-2.690
SRT3-XXXX	42.2-44.2	1.660-1.740	42.2-44.2	1.660-1.740	44.7-46.7	1.760-1.840	54.9-56.9	2.160-2.240	68.3-70.4	2.690-2.770	68.3-70.4	2.690-2.770
SRT4-XXXX	—	—	44.2-46.2	1.740-1.820	46.7-48.8	1.840-1.920	56.9-58.9	2.240-2.320	70.4-72.4	2.770-2.850	70.4-72.4	2.770-2.850
SRT5-XXXX	—	—	46.2-48.3	1.820-1.900	48.8-50.8	1.920-2.000	58.9-61.0	2.320-2.400	72.4-74.4	2.850-2.930	72.4-74.4	2.850-2.930
SRT6-XXXX	—	—	48.3-50.3	1.900-1.980	50.8-52.8	2.000-2.080	61.0-63.0	2.400-2.480	74.4-76.5	2.930-3.010	74.4-76.5	2.930-3.010
SRT7-XXXX	—	—	50.3-52.3	1.980-2.060	52.8-54.9	2.080-2.160	63.0-65.0	2.480-2.560	76.5-78.5	3.010-3.090	76.5-78.5	3.010-3.090

XXXX = Order abrasive type and grit size from chart below.

Diamond (D or R) & CBN (N) — Metal (M) Bond — 6 per Set

100	150	220	280	400	500	600
		DM55				DM05
					RMG97	
		NMG55		NMG85		
NMG37	NMG47		NMG67	NMG87		

Abrasives are special order - Contact Customer Service for Availability.

Alignment Bushings

CRC-2120	CRC-2330
CRC-2220	CRC-2370
CRC-2240	CRC-2420
CRC-2270	CRC-2490

Note: For additional sizes contact Customer Service for price and availability.



+ Special Order - Contact Customer Service

Recommended Stone Sets for AN-600

For Holes Without Keyways

For Holes With Keyways

General Purpose Stone Sets
(2 Stones and 2 Guides)

Guideless Stone Sets

Keyway Stone Sets

Maximum Keyway Width
20.3mm (.8") 22.8mm (.9") 30.4mm (1.2") 35.5mm (1.4")

HONING UNIT
SELECTION GUIDE

PEDESTAL MACHINES
(ML, EC, MBB, & LBB)

PLATED TOOLING
(KGM & VSS MACHINES)

CYLINDER HONING
(SV-410 & SV-10 MACHINES)

PORTABLE, MP3 & TUBE
HONE ABRASIVES

CUSTOM ABRASIVES
& TOOLING

**Hole
Diameters**

64 to 69mm (2.5"-2.7")
69 to 104mm (2.7"-4.1")
89 to 140mm (3.5"-5.5")
104 to 165.1mm (4.1"-6.5")

64 to 84mm (2.5"-3.3")
84 to 107mm (3.3"-4.2")
102 to 142mm (4.0"-5.6")
114 to 165.1mm (4.5"-6.5")

64 to 84mm (2.5"-3.3")
84 to 107mm (3.3"-4.2")
102 to 142mm (4.0"-5.6")
114 to 165.1mm (4.5"-6.5")

Fast stock removal: deburred, bored, ground, reamed holes

Aluminum	G25-J45	M27-J45	N37-J45	W47-J45	GG25-J45	MM33-J45	NN40-J45	WW51-J45	GY25-J45	MY33-J45	NY40-J45	WY51-J45
Brass, Soft	G25-J65	M27-J65	N37-J65	W47-J65	GG25-J65	MM33-J65	NN40-J65	WW51-J65	GY25-J65	MY33-J65	NY40-J65	WY51-J65
Bronze	G25-J45	M27-J45	N37-J45	W47-J45	GG25-J45	MM33-J45	NN40-J45	WW51-J45	GY25-J45	MY33-J45	NY40-J45	WY51-J45
Carbide	G25-DV57	M27-DV57	N37-DV57	W47-DV57	—	—	—	—	—	—	—	—
Cast iron	G25-J45	M27-J45	N37-J45	W47-J45	GG25-J45	MM33-J45	NN40-J45	WW51-J45	GY25-J45	MY33-J45	NY40-J45	WY51-J45
Ceramic	—	—	—	—	—	—	—	—	—	—	—	—
Glass	—	—	—	—	—	—	—	—	—	—	—	—
Steel, Soft	G25-A45	M27-A45	N37-A45	W47-A45	GG25-A45	MM33-A45	NN40-A45	WW51-A45	GY25-A45	MY33-A45	NY40-A45	WY51-A45
Steel, Hardened	G25-A45	M27-A45	N37-A45	W47-A45	GG25-A45	MM33-A45	NN40-A45	WW51-A45	GY25-A45	MY33-A45	NY40-A45	WY51-A45
Steel, Hardened (if A43 does not cut)	G25-NR53	M27-NR53	N37-NR53	W47-NR53	—	—	—	—	—	—	—	—

Fine finishing: previously honed holes

Aluminum	G25-J87	M27-J87	N37-J87	W47-J87	GG25-J87	MM33-J85	NN40-J87	WW51-J87	GY25-J87	MY33-J87	NY40-J87	WY51-J87
Brass, Soft	G25-J85	M27-J85	N37-J85	W47-J85	GG25-J85	MM33-J87	NN40-J85	WW51-J85	GY25-J85	MY33-J85	NY40-J85	WY51-J85
Bronze	G25-J87	M27-J87	N37-J87	W47-J87	GG25-J87	MM33-J87	NN40-J87	WW51-J87	GY25-J87	MY33-J87	NY40-J87	WY51-J87
Carbide	—	—	—	—	—	—	—	—	—	—	—	—
Cast iron	G25-J87	M27-J87	N37-J87	W47-J87	GG25-J87	—	NN40-J87	WW51-J87	GY25-J87	MY33-J87	NY40-J87	WY51-J87
Ceramic	—	—	—	—	—	—	—	—	—	—	—	—
Glass	—	—	—	—	—	—	—	—	—	—	—	—
Steel, Hard	G25-J85	M27-J85	N37-J85	W47-J85	GG25-J85	MM33-J85	NN40-J85	WW51-J85	GY25-J85	MY33-J85	NY40-J85	WY51-J85
Steel, Soft	G25-J87	M27-J87	N37-J87	W47-J87	GG25-J87	MM33-J87	NN40-J87	WW51-J87	GY25-J87	MY33-J87	NY40-J87	WY51-J87

† These stones require the use of Master Holders.

CBN and Diamond Stones

Metal Bond

Use to increase stock removal rates or abrasive life when compared to A or J stones, resin or vitrified diamond and CBN stones. First time users of metal bond superabrasive stone sets must order ___-KB5X (G25-KB5X) Master Holder Set. Replacement stone can be ordered without reordering KB5X Master Holders.

* Special Order - Contact Customer Service

Master Holder Number	Stone Set Number	Diameter Range mm	inches
G25-KB5X	G25-___-XG55	64-69	2.5-2.7
M27-KB5X	M27-___-XG55	69-104	2.7-4.1
N37-KB5X	N37-___-XG55	89-140	3.5-5.5
W47-KB5X	W47-___-XG55	104-533	4.1-6.5

The ___ in the stone set number is for the metal bond abrasive code. This set consists of two L16 superabrasive stones and two roughing guides. Select the L16 metal bond superabrasive stone desired from the stone selection guide found on page 2.33. Contact Customer Service for price and availability.

Resin or Vitrified Bond

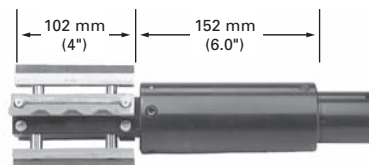
For honing carbide, ceramic, glass and hardened steel. Available in 82,55 mm (3-1/4") or 101.6 mm (4") stone length. For 82,55 mm (3-1/4") length add -85 to stone number.

Diamond Stone	CBN Stone
DV47	NR53 Resin Bond
DV57	NR83 Resin Bond
DV87	—
DV07	—

AN-600 Honing Head

Diameter Range: 63,5 mm - 165,0 mm (2.500"-6.500")

For use with Sunnen Honing Machine, for honing large bores. Accuracy to 0,013 mm (.0005"). Uses G25, M27, N37, W47, GG25, MM33, NN40, WW51, GY25, MY33, NY40, or WY51 Stone Sets, depending upon the bore diameter. Honing stone length 102 mm (4"). Order stones separately. Not suitable for power honing over 95 mm (3.75") diameter. See above for Recommended Stone Chart.



Finish figures apply only if Sunnen Industrial Honing Oil is used.

Retractable Mandrels

The Sunnen KR and BLR series of honing mandrels with retractable stone assemblies ensure greater efficiency in virtually all bore sizing and finishing operations.

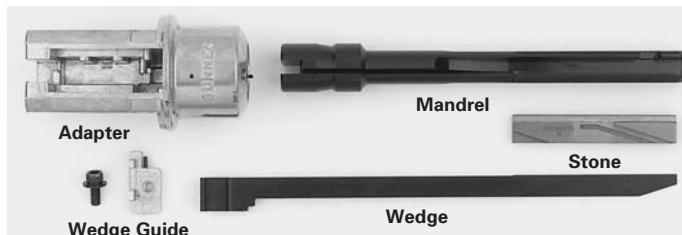


The new retractable KR mandrel series is available for diameter ranges from .185"-.744" (4,70-18,90 mm). The longer BLR series of retractable mandrels is also available for the same diameter range, and incorporates a longer stone.

Retractable mandrel and stone assemblies are available at the same price as the non-retractable mandrel units.

Benefits of Sunnen's Retractable Mandrels:

- Stones are retracted from the cutting position for much easier loading and unloading of parts which increases production and lowers manufacturing costs.
- Stronger mandrels remove stock at a faster rate, increasing production speeds and lowering cost per part honed.
- Units come with extended wear surfaces (shoes) standard, in either hard steel or plated diamond. This ensures longer service life and significantly reduces centerline changes from cycle to cycle. Also, downtime is lowered which increases productivity and reduces unit costs.
- Mandrel units have hardened wedges to prolong wedge life. This assures high performance honing from start to finish for better cost efficiency.
- The stone retraction feature is ideal for use in automated applications facilitating loading and unloading, reducing labor costs.
- Retraction marks and scratches that can occur when taking the part off the mandrel after honing are greatly minimized. This ensures a consistently higher-quality end product.



Retractable Mandrel Options

Diamond Plated Super Mandrels —

Designed to provide a long-wearing guide shoe to increase mandrel life in some applications...plus faster stock removal in difficult materials (chrome, carbide). Plated with 220 grit diamond.

Carbide Shoe Mandrels —

(Available on Special Order)

Two types of Carbide Shoe Mandrels are available for high-production applications. Available in either Round Carbide Rod Inserted and Full Carbide Shoe Mandrels. In the correct application they will last significantly longer than standard hardened mandrels and prevent galling in exotic materials such as 303 stainless steel. When ordering full-carbide type specify starting and finish diameter.

Extended Shank Mandrels —

(Available on Special Order)

Extended Shank Mandrels are available for honing parts that are too long to be honed with a standard mandrel.

Metal Bond Superabrasive Insert Mandrels —

(Available on Special Order)

For applications where a long lasting mandrel is needed and the materials being honed reacts negatively with either a hardened or carbide shoe mandrel. Single or double insert mandrels in either CBN or diamond are available.

How To Order

To order a retractable KR-16 or BLR-16 13,36 mm - 14,15 mm (.526"-.557") diameter mandrel, simply add "R" after the "K" or after the "BL" from the corresponding table on pages 2.14 - 2.44 in this catalog. SEE EXAMPLE BELOW (from page 2.30 of catalog):

Order 1-5 For Complete K16 or J-K16 Honing Units

Diameter Range 12,57 mm - 15,72 mm .495" - .619"		1 K16 Mandrel Includes wedge	1 J-K16 Mandrel Includes wedge	2 Truing Sleeve	3 Adapter For J-K16 mandrels order J-K16-A adapter	4 Alignment Bushing	5 Honing Stone
mm	inches	Mandrel With Standard Shank Choose One Suffix	Steel Mandrel With Extra-Long Shank Choose One Suffix		With stone retainer and wedge guide	For machines with fully adjustable spindle nose	
12,57-13,36	.495-.526	K16-495A H SD	J-K16-495A H SD	S-495	K16-A	C-495	Contact Customer Service For Availability
13,36-14,15	.526-.557	K16-526A H SD	J-K16-526A H SD	S-526	K16-A	C-526	
14,15-14,94	.557-.588	K16-557A H SD	J-K16-557A H SD	S-557	K16-A	C-557	
14,94-15,72	.588-.619	K16-588A H SD	J-K16-588A H SD	S-588	K16-A	C-588	

H = hardened steel
SD = diamond plated

Example: KR16-526AH

KR16-A

KR16- _ _ _ _

* Special Order - Contact Customer Service