APPROXIMATE DIAMETER OF ABRASIVE GRAINS

FEPA grain size (mesh) in mm and inches
Average Grain Diameter

1/1000 inch = 25 microns
1 micron=0.001 mm

FEPA Designation	Average Dia. in mm	Average Dia. in inch
8	2.40	0.096
10	2.00	0.080
12	1.70	0.068
14	1.40	0.056
16	1.20	0.048
20	1.00	0.040
24	0.71	0.028
30	0.59	0.024
36	0.50	0.020
40	0.42	0.017
46	0.35	0.014
54	0.30	0.012
60	0.25	0.010
70	0.21	0.008
80	0.18	0.007
90	0.15	0.006
100	0.13	0.005
120	0.10	0.004
150	0.08	0.003
180	0.07	0.0028
220	0.06	0.0024
240	0.05	0.0021
280	0.04	0.0017
320	0.03	0.0012
400	0.02	0.0008
500	0.014	0.0006
600	0.010	0.0004
850	0.007	0.0003
1200	0.004	0.0002

SURFACE FINISH COMPARISON TABLE

R_a µm	R_t µm	R_z µm	RMS µ inch	CLA µ inch	PVA µ inch
0.025	0.2	0.16	1.12	1	6
0.05	0.4	0.32	2.2	2	12
0.06	0.5	0.38	2.7	2.4	16
0.08	0.6	0.5	3.6	3.2	20
0.1	0.8	0.6	4.5	4	25
0.12	1	0.75	5.3	5	32
0.16	1.25	1	7.1	6.3	40
0.2	1.5	1.25	9	8	50
0.25	2	1.6	11.2	7.1	63
0.31	2.5	2	14	12.5	80
0.4	3.2	2.5	18	16	100
0.5	4	3.2	22.4	20	125
0.6	5	4	28	25	160
0.8	6.3	5	35.5	31.5	200
1.0	8	6.3	45	40	250
1.25	10	8	56	50	320
1.6	12.5	10	71	63	400

R_a = DIN Centre Line Average
R_t = Maximum Peak to Trough Height over the surface
RMS = Root Mean Square Avg. Height
CLA = Centre Line Average
PVA = Peak to Valley Avg. Height
R_z = Average of fine absolute maximum peaks and troughs within the length fo 1m.

CONVERSION CHART

HARDNESS CONVERSION CHART

Rockwell Scale C	VPN	Brinell Hardness	Tons/ sq. in.	Kgf/ sq.mm
68.0	940			
67.5	920			
67.0	900			
66.5	883			
66.0	865			
65.5	848			
65.0	832		150	237
64.5	817		147	232
64.0	800		145	229
63.5	787		142	224
63.0	772		140	221
62.5	759		138	218
62.0	746		137	216
61.5	733		135	213
61.0	720		133	210
60.0	697		129	204
59.0	674		126	199
58.0	653		123	194
57.0	633		120	189
56.0	613		117	185
55.0	595		114	180
54.0	577		112	177
53.0	560	510	109	172
52.0	544	500	107	169
51.0	528	487	104	164
50.0	513	475	102	161
49.0	498	464	100	158
48.0	484	450	98	155
47.0	471	442	96	151
46.0	458	432	94	148
45.0	446	421	92	145
44.0	434	410	90	142
43.0	423	401	88	139
42.0	412	390	86	136
41.0	402	381	85	134
40.0	392	371	83	131
39.0	382	362	81	128
38.0	372	353	80	126
37.0	363	344	78	123
36.0	354	336	76	120
35.0	345	327	74	117
34.0	336	319	72	113
33.0	327	311	70	110
32.0	318	301	68	107
31.0	310	294	67	106
30.0	302	286	65	102

HARDNESS CONVERSION CHART

Rockwell Scale C	VPN	Brinell Hardness	Tons/ sq. in.	Kgf/ sq.mm
29.0	294	279	64	101
28.0	286	273	62	98
27.0	279	267	61	96
26.0	272	261	59	93
25.0	266	258	58	91
24.0	260	253	57	90
23.0	254	248	55	87
22.0	248	243	54	85
21.0	243	239	53	83
20.0	238	235	52	82
	228	226	50	79
	217	216	47	74
	207	206	45	71
	196	195	43	68
	187	187	41	64
	176	176	39	61
	165	165	37	58
	145	145	33	52
	131	131	30	47

BORE (H11) TOLERANCE CHART

Bore Diameter		H11 Tolerance		
Above (mm)	Up to and Including (mm)	Maximum (mm)	(inches)	Minimum
3	6	+0.075	+0.0030	0
6	10	+0.090	+0.0035	0
10	18	+0.110	+0.0042	0
18	30	+0.130	+0.0050	0
30	50	+0.160	+0.0060	0
50	80	+0.190	+0.0075	0
80	120	+0.220	+0.0085	0
120	180	+0.250	+0.0100	0
180	250	+0.290	+0.0115	0
250	315	+0.320	+0.0125	0
315	400	+0.360	+0.0145	0
400	500	+0.400	+0.0160	0

STERLING ABRASIVES LTD.

CONVERSION TABLE - WHEEL SPEEDS

Revolutions per minute for various diameters of grinding wheels to give peripheral speed in meters/sec. as indicated

DIAMETER IN MM	PERIPHERAL SPEED IN METERS/SEC.															
	22 m/s	23 m/s	25 m/s	28 m/s	30 m/s	33 m/s	35 m/s	40 m/s	42 m/s	45 m/s	48 m/s	50 m/s	55 m/s	60 m/s	70 m/s	80 m/s
	REVOLUTIONS PER MINUTE (APPROX)															
25	16800	17600	19100	21500	22900	25000	26500	30500	32000	34500	36500	38000	42000	46000	-	-
50	8400	8800	9500	10800	11500	12600	13400	15300	16100	17200	18300	19100	21100	23000	-	-
80	5200	5500	6000	6800	7100	7900	8400	9500	10100	10700	11400	12000	13200	14300	-	-
100	4200	4400	4750	5400	5700	6300	6700	7600	3100	8600	9200	9600	10600	11500	-	-
125	3350	3500	3800	4300	4600	5050	5600	6100	6500	6900	7300	7600	8400	9200	-	-
150	2800	2950	3200	3600	3800	4200	4450	5100	5400	5700	6100	6400	7000	7600	-	-
180	2330	2430	2650	3000	3200	3500	3800	4250	4450	4750	5100	5300	5900	6400	7400	8500
200	2070	2160	2350	2620	2820	3100	3300	3750	3950	4250	4500	4700	5200	5600	6600	7500
230	1820	1910	2070	2320	2490	2740	2900	3320	3490	3730	4000	4150	4670	4980	5820	6600
250	1650	1720	1880	2100	2230	2500	2650	3000	3150	3400	3600	3750	4150	4500	5300	6000
300	1370	1440	1570	1750	1880	2070	2190	2500	2600	2800	3000	3150	3450	3750	4400	5000
350	1180	1240	1350	1500	1610	1780	1890	2160	2250	2400	2600	2700	2950	3250	3750	4300
400	1030	1080	1180	1320	1410	1550	1650	1880	1970	2120	2260	2350	2600	2850	3300	3750
450	900	960	1050	1170	1250	1380	1470	1680	1760	1880	2010	2090	2300	2500	2950	3350
500	830	870	940	1050	1130	1240	1320	1500	1580	1700	1810	1880	2060	2260	2650	3000
550	750	790	860	960	1030	1130	1200	1370	1440	1550	1650	1710	1910	2085	-	-
600	690	720	780	880	940	1030	1090	1250	1320	1410	1500	1570	1750	1910	-	-
650	640	670	720	810	870	960	1020	1160	1210	1310	1390	1450	1615	1765	-	-
700	590	620	670	750	810	890	940	1080	1130	1210	1290	1350	1500	1640	-	-
750	550	580	630	700	750	830	880	1000	1050	1130	1210	1260	1400	1530	-	-
800	520	550	580	660	700	770	820	940	980	1060	1130	1170	1315	1435	-	-
900	460	480	520	580	630	690	730	840	880	940	1000	1050	1170	1275	-	-
1000	415	430	460	530	560	620	660	750	790	850	910	940	1050	1145	-	-
1060	395	415	450	505	540	595	630	720	760	810	865	900	990	1080	-	-
1100	380	400	430	490	520	570	610	690	730	780	830	870	-	-	-	-
1200	345	360	400	440	470	520	550	630	660	710	750	780	-	-	-	-

MINIMUM DIAMETER OF GRINDING MACHINE SPINDLES

Minimum Diameters of Machine Spindles in M.M. for Overhung wheels of various Diameters and thicknesses operating at Seeds up to 33 Peripheral metres per second

THICKNESS OF WHEEL \ DIAMETER OF WHEEL	150	180	200 to 203	230	250 to 254	300 to 305	350 to 355	400 to 406	450 to 457	500 to 508	600 to 610	650 to 660	750 to 760	900 to 915	1200 to 1220	1500 to 1520
6	13	13	16	16	19	19	22	-	-	-	-	-	-	-	-	-
10	13	13	16	16	19	19	22	-	-	-	-	-	-	-	-	-
13	13	13	16	16	19	19	22	-	-	-	-	-	-	-	-	-
16	13	13	16	16	19	19	22	-	-	-	-	-	-	-	-	-
20	13	16	16	19	19	19	25	32	32	-	-	-	-	-	-	-
25	13	16	16	19	19	25	25	32	32	38	-	-	-	-	-	
30 to 32	16	16	16	19	19	25	32	32	32	38	38	38	-	-	-	-
40	16	16	16	19	19	25	32	32	38	38	38	38	45	-	-	-
45	19	19	19	25	25	25	32	32	38	38	45	45	45	50	-	-
50	19	19	25	25	25	25	32	32	38	38	45	45	50	57	64	-
57 to 60	19	19	25	25	25	32	32	38	38	38	45	45	50	57	64	-
65	19	19	25	25	32	32	32	38	38	38	45	45	50	57	64	-
70	19	19	25	25	32	32	32	38	38	45	45	50	50	64	70	-
75	19	25	25	32	32	32	38	38	38	45	45	50	50	64	70	75
80 to 83	19	25	25	32	32	32	38	38	45	45	50	50	57	64	70	75
90	19	25	25	32	32	32	38	45	45	50	50	50	57	70	75	80
100 to 102	25	25	32	32	32	38	38	45	45	50	50	57	64	70	75	80
115	25	25	32	32	38	38	38	45	50	50	50	57	64	75	80	90
127	25	25	32	32	38	38	38	45	50	50	50	57	64	75	80	90
150 to 152	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80	90

** For intermediate sizes, the recommendations of the manufacturer should be obtained.*

CYLINDRICAL GRINDING
Recommended Grinding Allowance

Dia. of job (mm)	Length of Job In MM							
	Up to 30	Up to 100	100-400	400-800	800-1200	1200-1600	1600-2000	More than 2000
		Grinding Allowance On Diameter (mm)						
3-10	0.20	0.25	0.30	-	-	-	-	-
11-20	0.25	0.30	0.35	-	-	-	-	-
21-30	0.30	0.35	0.40	0.45	-	-	-	-
31-50	-	0.40	0.50	0.55	0.60	-	-	-
51-50	-	0.45	0.55	0.60	0.70	0.75	0.85	0.90
101-200	-	0.50	0.60	0.70	0.75	0.80	0.90	0.95

Note : These values are for hardened steel jobs with minimum distribution in heat treatment values should be reduced slightly for unhardened jobs.

INTERNAL GRINDING
Recommended Grinding Allowance

Diameter of job (mm)	Hole Length				
	Up to 25	25 - 50	50 - 100	100 - 150	150 - 200
	Grinding Allowance On Diameter (mm)				
Up to 10	0.08	0.10	-	-	-
Up to 20	0.12	0.14	0.16	-	-
Up to 30	0.15	0.17	0.20	0.23	-
Up to 50	0.20	0.22	0.25	0.30	0.35
Up to 80	0.25	0.25	0.30	0.35	0.40
Up to 120	0.30	0.30	0.35	0.40	0.45

CUTTING PARAMETERS

Cutting Parameters in Traverse Grinding

Types of grinding	Surface speed of job (m/min)	Intermittent feed mm/ double stroke	Table traverse as % of wheel width per revo-lution of job	Grinding wheel diameter
Rough	20 - 60	0.005 - 0.02	0.6 - 0.7	75% of hole
Finish	20 - 60	0.0025 - 0.005	0.2 - 0.3	diameter

CENTRELESS GRINDING

Cutting Parameters in Throughfeed Grinding

Diameter of job (mm)	Grinding allowance on dia. (mm)	Job height above centre line (mm)	Stock removal dia. per pass (mm)	Control wheel angle	Surface speed of control wheel m/min
Under 10	0.15 - 0.20	1 - 3	0.05	3.5°	150
11 - 20	0.20 - 0.30	4 - 6	0.05	3.0°	120
21 - 30	0.30 - 0.40	6 - 8	0.10	3.0°	70
			0.15	2.5°	55
31 - 50	0.35 - 0.45	8 - 10	0.10	2.5°	45
			0.20	2.5°	25
51 - 75	0.45 - 0.55	10 - 15	0.20	2.0°	20
			0.30	2.0°	
76 - 100	0.50 - 0.60	15 - 20	0.20	1.5°	20
			0.40	1.0°	15