

3M[™] Cubitron[™] II Vitrified grinding wheels for bevel gear grinding

Gearings on bevel gears are subject to special requirements: efficient and reproducible production processes, smooth running, and low-maintenance operation – while meeting highest operating safety requirements – these are important properties to be mentioned.

3M[™] Cubitron[™] II vitrified grinding wheels are designed for bevel gear pinions and ring gears and meet highest tolerance requirements of only a few micrometers while achieving the required surface finish and minimal wear – and all that almost free of grinding abuse.

3M[™] Cubitron[™] II vitrified grinding wheels are suited both for grinding hardened components and for preliminary gearing (creep-feed grinding) of soft materials.

Application examples:

- Various sizes of bevel gear pinions and ring gears in:
- Drive systems (e.g. vehicles and helicopters)
- Steering systems (e.g. shipbuilding)
- Agricultural and industrial machines



The advantages at a glance:

- Reduced grinding time by approx. 20 30 %
- Doubled service life through reduced dressing amounts or longer intervals between dressing cycles
- Very low wear
- The risk of grinding abuse is virtually zero
- Significant increase of dressing roll service life



Application recommendation

Cutting speed (v	z) 20 − 23 m/s	20 – 23 m/s		Dressing		Infeed: 0.04 mm	
Feed rate (v _d)	Immersion: 120-15	Immersion: 120-150 mm/min			Feed rate of	concave: 155 mm/min	
	Generation grindir	Generation grinding: 24-30 °/s				Feed rate convex: 155 mm/min	
					Feed rate	tip: 185 mm/min	
Specification	recommendation		Dressing a	fter every 1	1st to 3rd co	mponent	
Product Code	Specification	PSG	v _c max.	Struc	ture	Comment	
92VC	93DA80/80 H12VP601	30 %	32 m/s	porou	IS	Universal < 12	
93VE	99DA80/80 H12VP901	100 %	32 m/s	porous		Universal >= 12"	
	99DA80/80 K11VP901	100 %	32 m/s	narro	w		

Service life and cost calculation bevel gear grinding

Gearing Data		
Specification	93A80 H12VP601	93DA80/80 H12VP601
Dimensions grinding wheel	225 × 95 W = 20	225 × 95 W = 20
Normal module (mm)	4 mm	4 mm
Number of teeth (z)	51	51
Pressure angle (alpha)	20°	20°
Helix angle (ß _m)	24°	24°
Pitch circle (d _{e2})	246.70 mm	246.70 mm
Tooth width (z_{b})	43 mm	43 mm
Tooth height (z _h)	11.10 mm	11.10 mm
Cutting speed (v _c)	25 m/s	22 m/s
Unclamping width (b _{s2})	22 mm	22 mm
Original price grinding wheel	€200	€ 280
Machine-hour rate	€ 100	€ 100
Operating Parameters		

	0.42 11111	0.42 mm
Total flank infeed (a _{e ges.})	0.14 mm	0.14 mm

Dressing		
Dressing infeed (a _e)	0.12 mm	0.04 mm
Number of parts between dressing cycles	1x	1 x

Evaluation	93A80 H12VP601	93DA80/80 L7901
Total material removal	0.42 mm	0.42 mm
Total running time	00:02:27 h:m:s	00:01:52 h:m:s
Total wheel wear per part	0.12 mm	0.04 mm
Cost share wheel	0.320 €/workpiece	0.149 €/workpiece
Number of workpieces per wheel	625 pcs.	1,875 pcs.
Total costs machine-hour rate	4.08 €/workpiece	3.11 €/workpiece
Total overall costs	4.40 €/workpiece	3.26 €/workpiece

For more information, or to make an appointment, please contact us at the address or telephone number below.



Wendt GmbH 3M Abrasives Fritz-Wendt-Str. 1 40670 Meerbusch Germany www.3m.com/precisiongrinding