

8

7

6

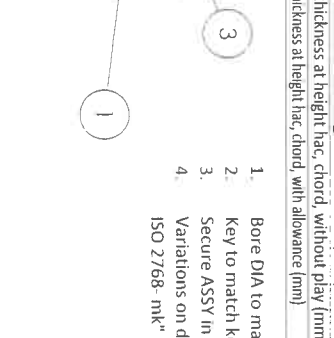
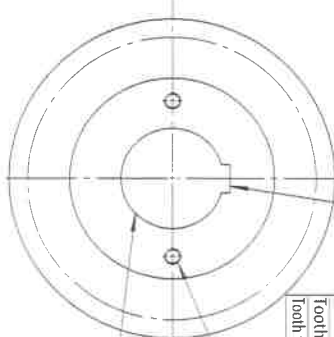
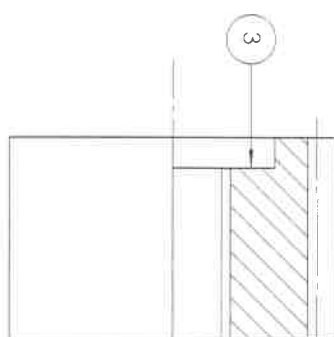
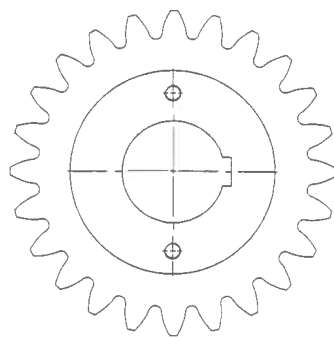
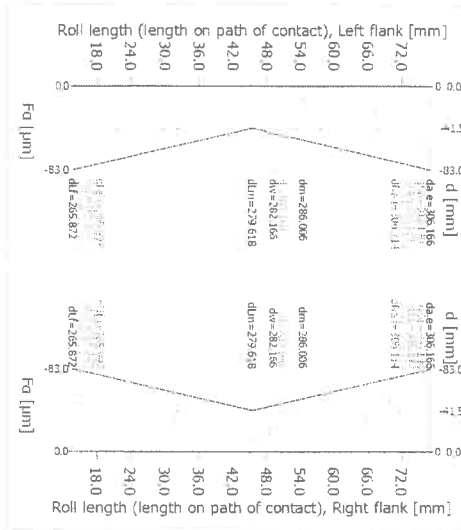
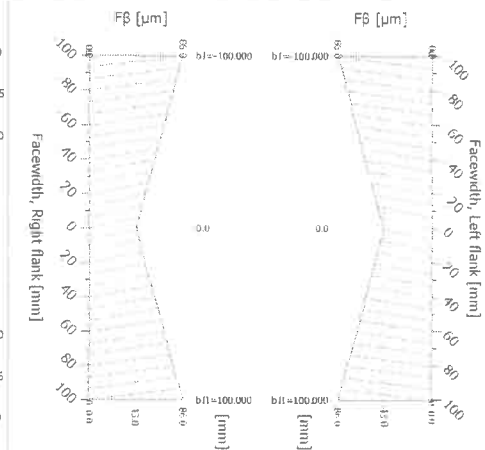
5

4

3

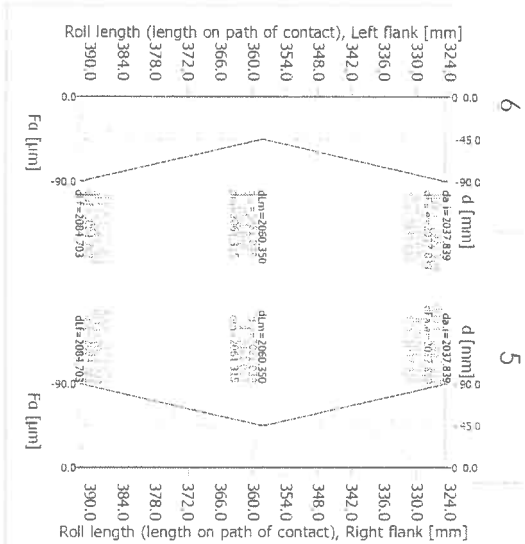
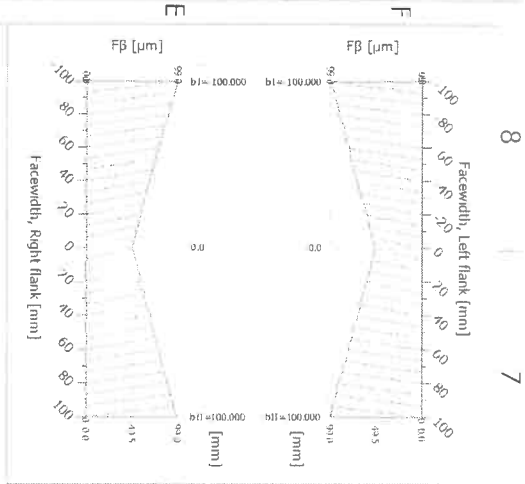
2

1

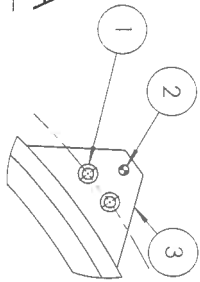


1. Bore DIA to match shaft DIA. Press fit to m6/ H7 or higher
2. Key to match keyway according to ISO/R773 - J59 width tolerance.
3. Secure ASSY in place as appropriate.
4. Variations on dimensions without tolerance values are according to "DIN ISO 2768 - mK"

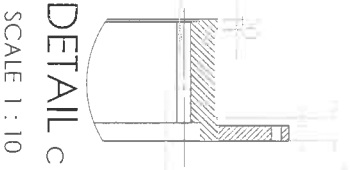
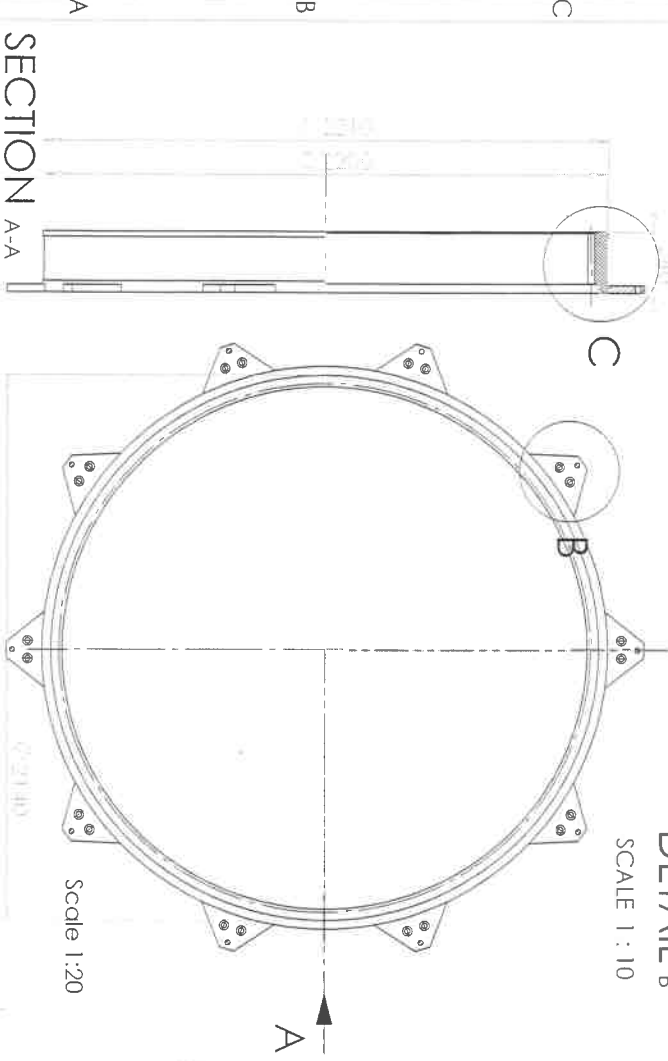
Part Description:	Existing pinion (helical)
Pinion	
Number of teeth	[Z] 23
Facewidth (mm)	[b] 200
Normal module (mm)	[m] 12
Transverse module (mm)	[mt] 12.268
Hand of gear	right
Helix angle (°)	[β] 12
Normal Diametral Pitch (1/inch)	[Pnd] 2.11667
Transverse Diametral Pitch (1/inch)	[Pdt] 2.07041
Normal pressure angle (°)	[αd] 20
Material	C45 ISO 6336-5 Figure 11/12 (MC) Flank & root hardened
Accuracy grade ISO 1328:2013	A10
Profile shift coefficient	[x] 0.000
Reference diameter (mm)	[d] 282.166
Tip diameter (mm)	[da] 306.166, 0.000/-0.052
Root diameter (mm)	[df] 252.166, -0.746/-1.488
Reference profile	1.25/0.38/1.0 ISO 53:1998 Profile A
Addendum coefficient	[haP*] 1.000
Dedendum coefficient	[hfP*] 1.250
Tip radius factor	[rαP*] 0.000
Root radius factor	[rFP*] 0.380
Tip form height coefficient	[hFαP*] 0.000
Protuberance height coefficient	[hPrP*] 0.000
Protuberance angle (°)	[αPrP] 0.000
Ramp angle (°)	[αkP] 0.000
not topping	
Tooth thickness tolerance	ISO 23509 Q8-12 (Table C.3)
Tooth thickness allowance (normal section) (mm)	[Ans. e/l] -0.271/-0.542
Number of teeth spanned	[k] 3
Base tangent length (no backlash) (mm)	[Wk] 92.681
Base tangent length with allowance (mm)	[Wk e/l] 92.426/ 92.172
Effective diameter of ball/ pin (mm)	[DMeff] 22.000
Measurement over two balls (mm)	[MDk e/l] 314.006/ 313.400
Measurement over pins according to DIN 3960 (mm)	[MDr e/l] 314.688/ 314.081
Measurement over three pins, axial according to AGMA 2002 (mm)	[MDR e/l] 314.688/ 314.081
Measurement over three pins with allowance (mm)	[MD3R e/l] 0/ 0
Reference chordal height from da-m (mm)	[hac] 12.288
Tooth thickness at height hac, chord, without play (mm)	[sc] 18.837
Tooth thickness at height hac, chord, with allowance (mm)	[sc e/l] 18.571/ 18.306



Part Description:	Existing gear wheel (helical)
Wheel	
Number of teeth	[z] 168
Facewidth (mm)	[b] 200
Normal module (mm)	[m] 12
Transverse module (mm)	[mt] 12.268
Hand of gear	right
Helix angle (°)	[β] 12
Normal Diametral Pitch (1/inch)	[Pnd] 2.1667
Transverse Diametral Pitch (1/inch)	[Ptd] 2.07041
Normal pressure angle (°)	[α] 20
Material	C45 ISO 6336-5 Figure 11/12 [MQ] Flank & root hardened
Accuracy grade ISO 1328-2013	A10
Profile shift coefficient	[x] 0.000
Reference diameter (mm)	[d] 2061.039
Tip diameter (mm)	[da] 2037.839, 0.000/0.175
Root diameter (mm)	[df] 2091.039, 0.746/1.488
Addendum coefficient	[ha*] 1.000
Dedendum coefficient	[hf*] 1.250
Tip radius factor	[ra*] 0.000
Root radius factor	[rf*] 0.380
Tip form height coefficient	[hfa*] 0.000
Protuberance height coefficient	[hfp*] 0.000
Protuberance angle (°)	[αrP] 0.000
Ramp angle (°)	[αr] 0.000
not topping	
Tooth thickness tolerance	ISO 23509 08-12 (Table C3)
Tooth thickness allowance (normal section) (mm)	[Ans e/II] -0.271/-0.542
Dimension gap number	[k] 0
Base tangent length (no backlash) (mm)	[Wk] 0
Base tangent length with allowance (mm)	[Wk e/II] 0/0
Effective diameter of ball/ pin (mm)	[DMeff] 20.000
Measurement over two balls (mm)	[MDk e/II] 2035.033/ 2035.791
Measurement over pins according to DIN 3960 (mm)	[MDr e/II] 0/0
Measurement over three pins, axial, according to AGMA 2002 (mm)	[MDr e/II] 0/0
Measurement over three pins with allowance (mm)	[MD3R e/II] 0/0
Reference chordal height from da m (mm)	[hac] 11.515
Tooth thickness at height hac, chord, without play (mm)	[sc] 18.849
Tooth thickness at height hac, chord, with allowance (mm)	[sc e/II] 18.577/ 18.306



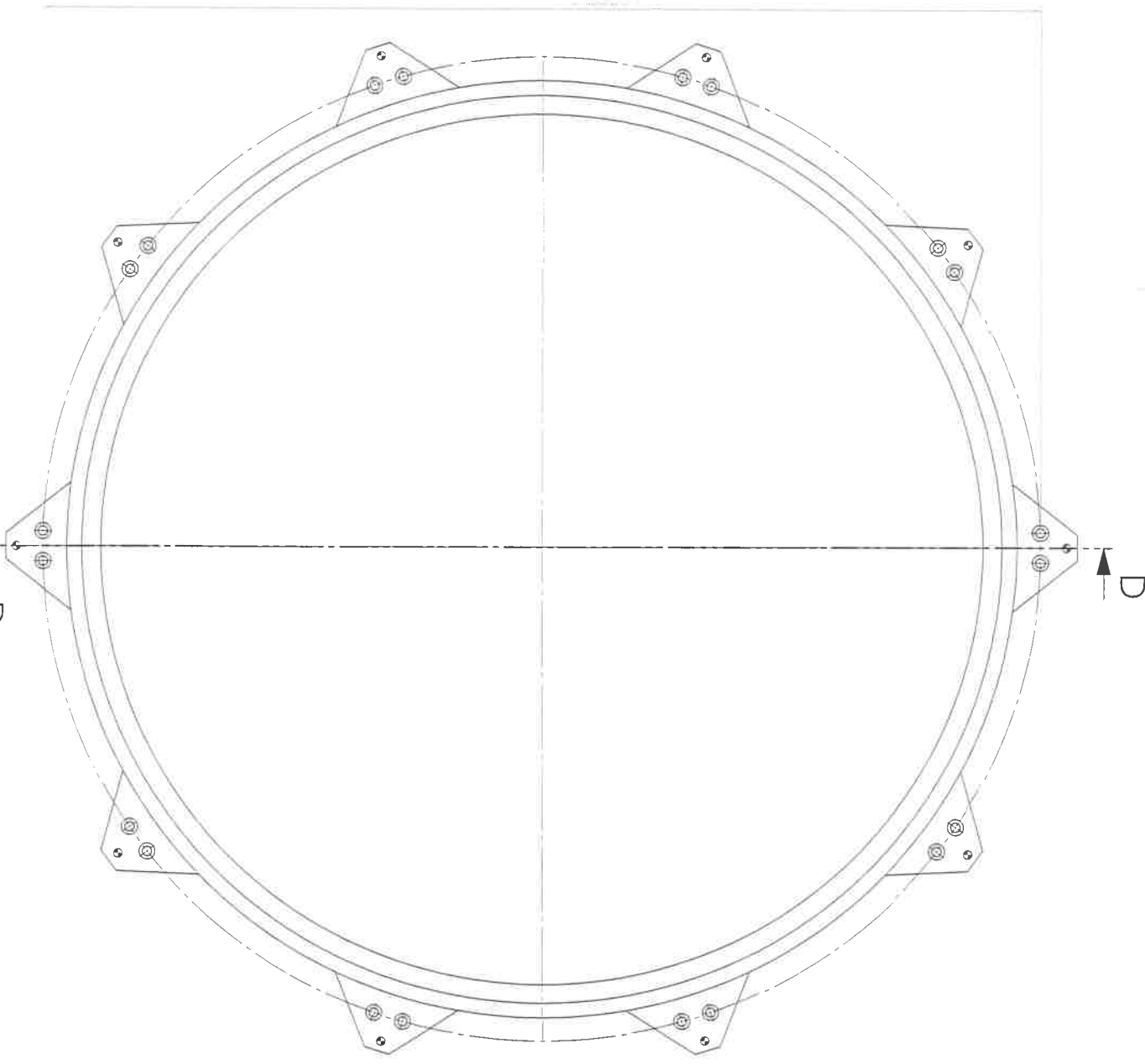
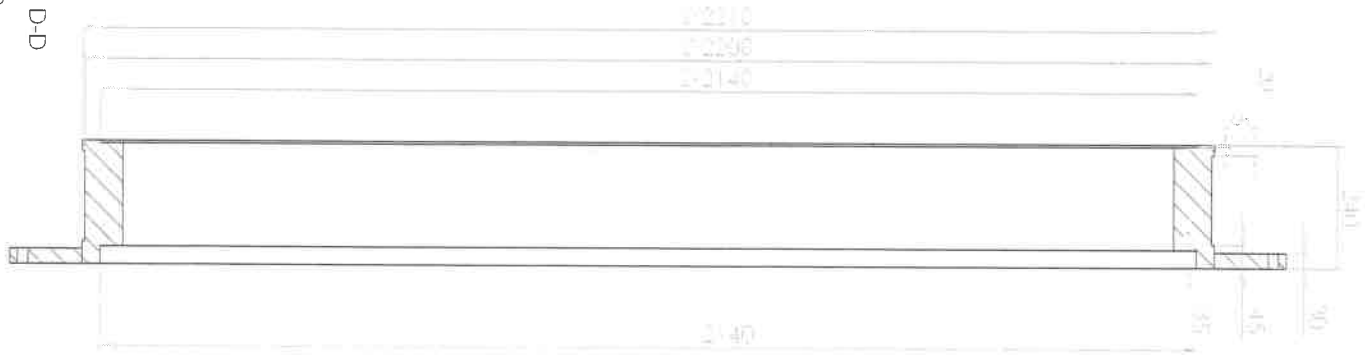
DETAIL B
SCALE 1:10



DETAIL C
SCALE 1:10

- 1 Drill two CB bolt holes for M20 hexagon socket bolts to match existing pulley threaded hole locations.
- 2 After centering the gear wheel relative to the shaft of the pulley, dowel holes must be drilled to install new (larger size) pins than the existing.
- 3 Ten (10) triangular sheet metal pieces equally spaced around the gear wheel. Peripherally weld to the gear wheel body.
- 4 Variations on dimensions without tolerance values are according to "DIN ISO 2768-mk"

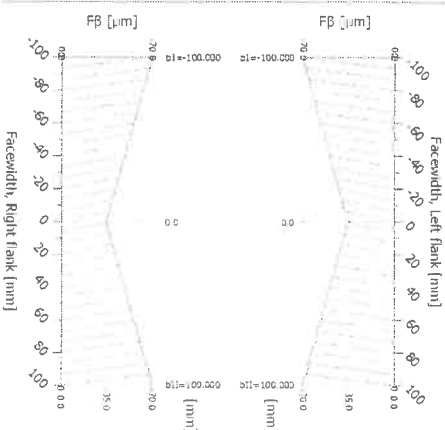
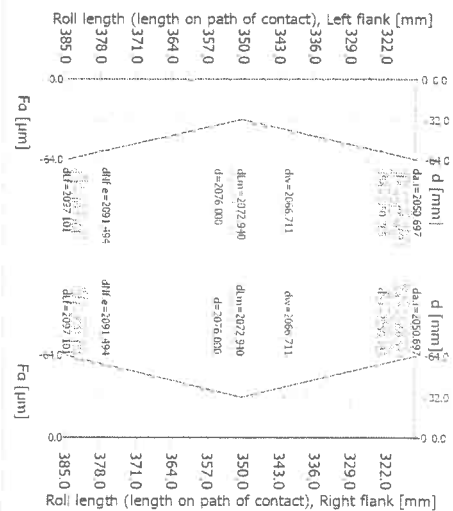
8 7 6 5 4 3 2 1



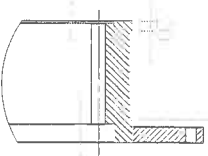
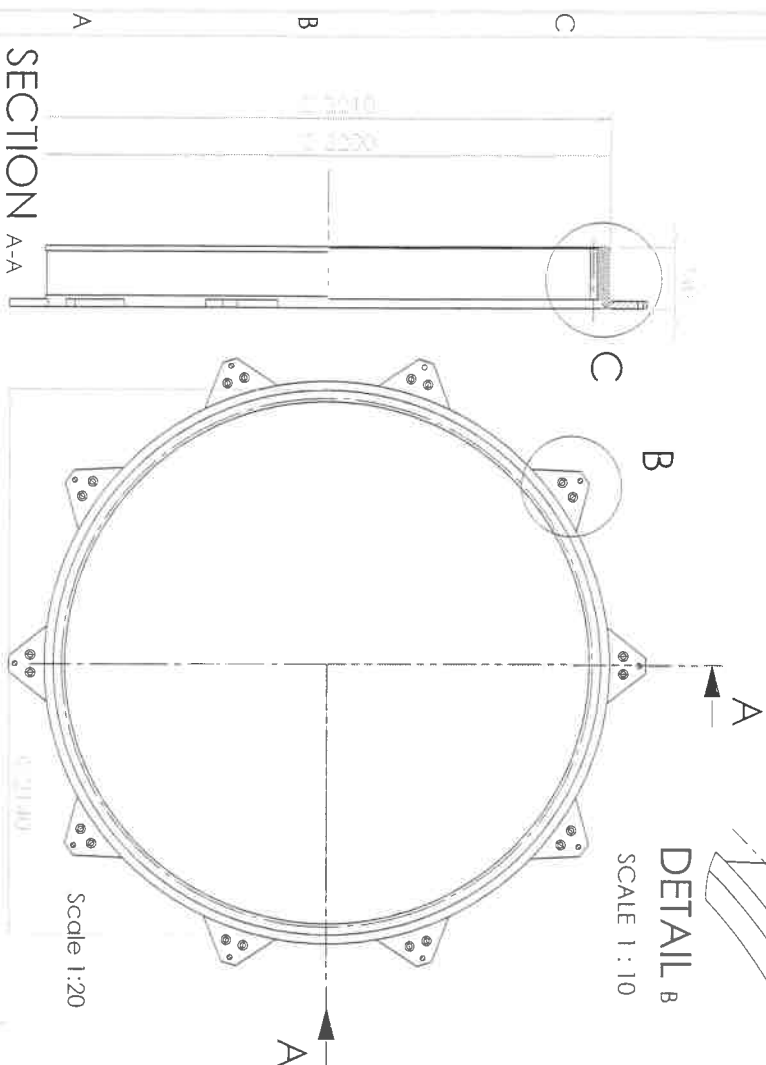
SECTION D-D
SCALE 1:10

A B C D E F

A B C D E F



Part Description	Redesigned gear wheel (spur)
Wheeler	
Number of teeth	z 173
Facewidth (mm)	fb 200
Normal module (mm)	mn 12
Transverse module (mm)	mt 12
Hand of gear	Spur gear
Helix angle (°)	β 0
Normal Diametral Pitch (1/inch)	pn 2.11667
Transverse Diametral Pitch (1/inch)	pt 2.11667
Normal pressure angle (°)	α 20
Material	C45 ISO 6336 5 Figure 11/12 (M0) Flank & root hardened
Accuracy grade ISO 1328 2013	A9
Profile shift coefficient	x 0.088
Reference diameter (mm)	da 2076.000
Tip diameter (mm)	da1 2050.697, 0.000/0.175
Root diameter (mm)	df 2103.897, 0.599/0.971
Addendum coefficient	ha* 1.000
Dedendum coefficient	hf* 1.250
Tip radius factor	pa* 0.000
Root radius factor	ra* 1.0.380
Tip form height coefficient	hfp* 0.000
Protrusion height coefficient	hpr* 0.000
Protuberance angle (°)	αpr 0.000
Ramp angle (°)	αrp 0.000
not topping	
Tooth thickness tolerance	ISO 23509 08_12 (Table C 3)
Tooth thickness allowance (normal section) (mm)	Ans_e/l 0.218/ -0.353
Dimension gap number	[k] 20
Base tangent length (no backlash) (mm)	[Wk] 719.155
Base tangent length with allowance (mm)	[Wk_e/l] 719.360/ 719.487
Effective diameter of ball/ pin (mm)	[DMeff] 20.000
Measurement over two balls (mm)	[MDk_e/l] 2047.596/ 2047.979
Measurement over pins according to DIN 3960 (mm)	[MDR_e/l] 2047.596/ 2047.979
Measurement over three pins with allowance (mm)	[MD3R_e/l] -2047.511/ -2047.894
Reference chordal height from da m (mm)	[hae] 12.561
Tooth thickness at height hae, chord, without play (mm)	[sc] 19.615
Tooth thickness at height hae, chord, with allowance (mm)	[sc_e/l] 19.396/ 19.260



1. Drill two CB bolt holes for M20 hexagon socket bolts to match existing pulley threaded hole locations.
2. After centering the gear wheel relative to the shaft of the pulley, dowel holes must be drilled to install new (larger size) pins than the existing.
3. Ten (10) triangular sheet metal pieces equally spaced around the gear wheel. Peripherally weld to the gear wheel body.
4. Variations on dimensions without tolerance values are according to "DIN ISO 2768 mk".

8 7 6 5 4 3 2 1

F E D C B A

SECTION D-D

SCALE 1:10

8 7 6 5 4 3 2 1

