

STEP 1: INPUT REQUIRED DATA	
GEAR HEEL PITCH DIAMETER (MM):	120.000
RATIO ([PINION RPM] / [GEAR RPM]):	2.84615
HAND OF SPIRAL ON GEAR (LEFT OR RIGHT):	LEFT

STEP 2: "Save as IGES" and CHECK COMMONLY USED

		COMMONLY USED
STEP 3: CORRECT IF NEEDED AND REPEAT STEP 2		
NUMBER OF TEETH ON GEAR:	37	48
NUMBER OF TEETH ON PINION:	13	17
GEAR FACE WIDTH (MM):	21	19.10
PRESSURE ANGLE (DEG):	22.5	20
SPIRAL ANGLE (DEG):	35	35
GEAR TRANSVERSAL TOOTH THICKNESS ON HEEL (MM):	4.9	5.094
ANGULAR BACKLASH ON GEAR (DEG):	0.11	0.1161
GEAR COEFFICIENT OF ADDENDUM:	0.9	1
COEFFICIENT OF TOOTH HEIGHT:	2.11	2.25
SPIRAL TOOTH GENERATING DIAMETER (MM):	84	84
PROFILE CROWNING (MM):	0.005	0.0038
LEAD CROWNING (MM):	0.03	0.0191

RATIO	2.84615
GEAR FACE ANGLE (DEG):	73.25245
PINION FACE ANGLE (DEG):	22.25270
PINION OD (MM):	47.18156
GEAR OD (MM):	121.640968
PITCH APEX TO CROWN ON PINION (MM):	59.11821
PITCH APEX TO CROWN ON GEAR (MM):	18.745858
ROOT CLEARANCE (MM):	0.55452
PINION HEEL PITCH DIAMETER (MM):	42.16216
PINION TRANSVERSAL TOOTH THICKNESS ON HEEL (MM)	5.17376

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Spiral_Bevel_3D_08_11.xls [Compatibility Mode]

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Workbook Views Macros

B43

STEP 1: INPUT GEOMETRY DATA

GEAR HUB BEVEL HORN DIA	1.0000
FACE CHAMFER DIA (GEAR HUB)	2.0400
HORN OF SPIRAL ON GEAR LEFT OR RIGHT	LEFT

STEP 2: Save as the 'S' and CHAMFER COMMANDS TO USE

STEP 3: CORRECT W/ WEAR AND REPEAT STEP 3

	COMMONLY USED
NUMBER OF 1/16" IN ON GEAR	32
NUMBER OF 1/16" IN ON HORN	11
GEAR FACE ANGLE (DEG)	42
FACE CHAMFER ANGLE (DEG)	30
GEAR HUB ANGLE (DEG)	30
GEAR HUB THROAT RADIUS (TOOTH THICKNESS ON HUB, DIA)	4.00
GEAR HUB ANGLE (DEG)	0.1191
GEAR COEFFICIENT OF ADDENDUM	0.3
COEFFICIENT OF TOOTH HEIGHT	2.25
SPINAL 1/16" IN (GENERATING GEAR DIA DIA)	34
FACE CHAMFER DIA	0.2000
FACE CHAMFER ANGLE	0.1191

RESULTS

FACE CHAMFER DIA	2.0400
GEAR FACE ANGLE (DEG)	42.0000
HORN FACE ANGLE (DEG)	30.0000
HORN DIA (DEG)	41.0000
GEAR DIA (DEG)	101.0000
FACE ANGLE TO CHAMFER ON HORN (DEG)	30.0000
FACE ANGLE TO CHAMFER ON GEAR (DEG)	42.0000
SOFT COUNTERSINK DIA	0.2000
HORN HUB PITCH DIA (DEG)	42.0000
HORN HUB PITCH DIA (TOOTH THICKNESS ON HUB, DIA)	4.0000

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Formula Bar: =AVERAGE(B3:B20) Count: 20 Sum: 392.9231

Steel Alloy

3D Model Inspect Tools Manage View Environments Vault Get Started Online

Create 3D Sketch Primitives Create Modify Fusion Work Features Pattern Surface Plastic Part Harness Convert

Sketch Primitives Create Modify Fusion Work Features Pattern Surface Plastic Part Harness Convert

Model

- Pinon Solid.pt
- 3rd Party
- Solid Bodies(3)
- New Master
- Origin
- Revolution1
- Fillet1
- Chamfer1
- Chamfer2
- Fillet2
- Chamfer4
- Chamfer5
- End of Part

Ready

1 1

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Workbook Views

443

Macro

Macro name: Pinion
Gear

Run Stop Info Edit Create Delete Options...

Register in: All Open workbooks

Description:

BASE	2.84131
GEAR FACE ANGLE (DEG)	7.73245
PIGION FACE ANGLE (DEG)	22.26755
PIGION OD (mm)	61.11135
GEAR OD (mm)	120.84269
PIGION APX. TO CROWN (mm)	58.11132
PIGION APX. TO CROWN (mm) (G.M.A.R.)	18.75558
ROOT CROWN (mm)	8.25422
PIGION HELL (mm) (M.A.R. TO GEAR)	42.16722
PIGION HOLLOW (mm) (TO THICKNESS OF HELL)	8.11132

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Average: 39.2620 Count: 20 Sum: 792.82875 80%

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3D Model Inspect Tools Manage View Environments Vault Get Started Online

Create 3D Sketch Primitives Create Modify Fusion Work Features Pattern Surface Plastic Part Harness Convert

Sketch Primitives Create Modify Fusion Work Features Pattern Surface Plastic Part Harness Convert

Model

- Pinion Solid.prt
- 3rd Party
- Solid Bodies(3)
- Surface Bodies(2)
- New Master
- Origin
- Revolution(1)
- Fillet
- Chamfer(1)
- Chamfer(2)
- Fillet
- Chamfer(4)
- Chamfer(3)
- Surface(1)
- Split
- End of Part

Ready

1 1

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Normal Page Layout Show Zoom Window Macros

Workbook Views Macros

B43

FORMER FACE TO CHROME FINISH
FORMER FACE AREA
FACE WIDTH
FORMER FACE AREA

Macro

Macro name: Form

Macro list:

Form	
Gear	
Pinion	

Register in: All Open Workbooks

Description:

Cancel

BA10	2.24415
GEAR FACE AREA (SQ)	2.72415
PINION FACE AREA (SQ)	22.25215
PINION VOL (CM3)	41.18125
GEAR VOL (CM3)	121.84205
PINION AREA 12 (SQ) (On Pinion only)	58.11162
PINION AREA 12 (SQ) (On Gear only)	18.74555
SOOT (CUBIC) (CM3)	8.24252
PINION HELL (CM) (MAX 18 (mm))	42.16125
PINION HELL (CM) (MAX 18 (mm))	8.11125

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Ready

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3D Model Inspect Tools Manage View Environments Vault Get Started Online

Create 3D Sketch Primitives Create Modify Fusion Work Features Pattern Surface Plastic Part Harness Convert

Sketch Primitives Create Modify Fusion Work Features Pattern Surface Plastic Part Harness Convert

Model

- Pinion Solid.prt
- 3rd Party
- Solid Bodies(1)
- Surface Bodies(12)
- New Master
- Origin
- Revolution1
- Filter1
- Chamfer1
- Chamfer2
- Filter2
- Chamfer4
- Chamfer3
- Surface1
- Split1
- Circular Pattern1
- Features
- Document1
- Document2
- Document3
- Document4
- Document5
- Document6
- Document7
- Document8
- Document9
- Document10
- Document11
- Document12
- Document13
- End of Part

Ready

Excel spreadsheet showing a macro editor and a data table.

Macro Editor:

Macro name: **Run** **Stop Info** **Edit** **Create** **Delete** **Options...**

Macro list: **All Open Workbooks**

Description:

Data Table:

3	3	2.8415
4	3	2.7215
5	3	2.6015
6	3	2.4815
7	3	2.3615
8	3	2.2415
9	3	2.1215
10	3	2.0015
11	3	1.8815
12	3	1.7615
13	3	1.6415
14	3	1.5215
15	3	1.4015
16	3	1.2815
17	3	1.1615
18	3	1.0415
19	3	0.9215
20	3	0.8015
21	3	0.6815
22	3	0.5615
23	3	0.4415
24	3	0.3215
25	3	0.2015
26	3	0.0815
27	3	0.0015
28	3	0.0015
29	3	0.0015
30	3	0.0015
31	3	0.0015
32	3	0.0015
33	3	0.0015
34	3	0.0015
35	3	0.0015
36	3	0.0015
37	3	0.0015
38	3	0.0015
39	3	0.0015
40	3	0.0015
41	3	0.0015
42	3	0.0015
43	3	0.0015
44	3	0.0015
45	3	0.0015
46	3	0.0015
47	3	0.0015
48	3	0.0015
49	3	0.0015
50	3	0.0015
51	3	0.0015
52	3	0.0015
53	3	0.0015
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61	3	0.0015
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82	3	0.0015
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91	3	0.0015
92	3	0.0015
93	3	0.0015
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96	3	0.0015
97	3	0.0015
98	3	0.0015
99	3	0.0015
100	3	0.0015

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3D CAD software interface showing a 3D model of a gear-like part.

Software: SolidWorks

File: 3D Model, Sketch, Primitives, Create, Modify, Fusion, Work Features, Pattern, Surface, Plastic Part, Harness, Convert

Model Tree:

- Parten Solid.prt
- 3rd Party
- Solid Bodies(3)
- Surface Bodies(10)
- Work Master
- Origin
- Revolve1
- Flatt1
- Chamfer1
- Chamfer2
- Flatt2
- Chamfer4
- Chamfer5
- Surface1
- Sketch1
- Circular Pattern1
- Features
- Document1
- Document2
- Document3
- Document4
- Document5
- Document6
- Document7
- Document8
- Document9
- Document10
- Document11
- Document12
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- Document89
- Document90
- Document91
- Document92
- Document93
- Document94
- Document95
- Document96
- Document97
- Document98
- Document99
- Document100
- End of Part

3D Model: A 3D model of a gear-like part with a red highlight on the top surface.

Bottom Bar: Average: 39.2633, Count: 20, Sum: 782.9271, 60%

Excel spreadsheet showing a technical drawing of a gear-like part with dimensions and a Macro dialog box.

Macro Dialog Box:

- Macro name:
- Macro list:
- Register in: All Open Workbooks
- Buttons: Run, Stop Into, Edit, Create, Delete, Options, Cancel

Spreadsheet Data:

43	BEARING	2.04135
44	GEAR FACE ANGLE (DEG)	27.26745
45	GEAR FACE ANGLE (DEG)	27.26745
46	GEAR OD (mm)	41.51135
47	GEAR ID (mm)	10.54205
48	GEAR ADD (mm)	38.11435
49	GEAR ADD TO CHORD ON PITCH DIA.	18.15535
50	GEAR ADD TO CHORD ON GEAR DIA.	18.15535
51	GEAR CHORDAL ADD (mm)	8.21435
52	GEAR CHORDAL ADD TO CHORD ON PITCH DIA.	42.16735
53	GEAR CHORDAL ADD TO CHORD ON GEAR DIA.	5.11135

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3D CAD software interface showing a 3D model of a curved surface and a list of features.

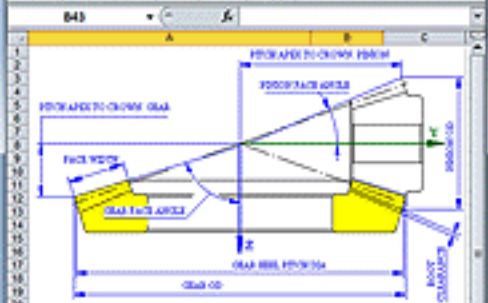
3D Model: A curved, reddish-brown surface is displayed in a 3D view.

Feature Tree:

- Person Solid.apt
- 2nd Party
- Solid Bodies(3)
- Surface Bodies(2)
- Work Master
- Origin
- Surface1
- Surface2
- End of Part

Toolbars: 3D Sketch, Primitives, Create, Modify, Fusion, Work Features, Pattern, Surface, Plastic Part, Harness, Convert.

Ready



STEP 1: INPUT OR GIVEN DATA	
GEAR HUB, BEVEL HUB DIA (mm)	100.000
BEVEL CHAMFER DIA (GEAR HUB)	2.0000
HAND OF SPIRAL ON GEAR LEFT OR RIGHT	LEFT

STEP 2: GEAR AND GEAR 2 AND CHAMFER 1 TO 2

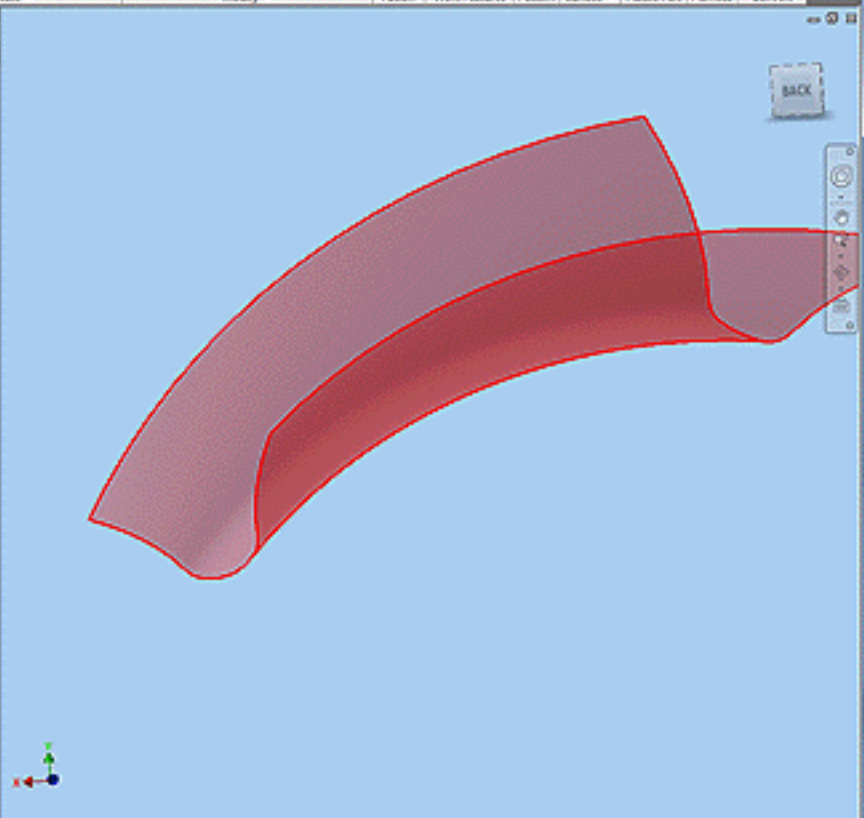
STEP 3: COMPLETE W/ REQUIRED AND REPEAT STEP 3		COMMONLY USED
NUMBER OF TEETH ON GEAR	20	40
NUMBER OF TEETH ON PLEAS	10	11
GEAR FACE WIDTH (mm)	20	19.70
NECESSARY ADDL GEAR	20.1	20
SPIRAL ANGLE (DEG)	30	21
GEAR TRANSVERSE TOOTH THICKNESS ON HUB (mm)	4.3	4.194
ANGULAR BACKLASH ON GEAR (DEG)	0.11	0.11901
GEAR COEFFICIENT OF ADDENDUM	0.3	1
COEFFICIENT OF TOOTH HEIGHT	2.11	2.25
SPIRAL TOOTH GENERATING GEAR DIA (mm)	64	64
GEAR 2 COEFFICIENT	0.300	0.3000
GEAR 2 COEFFICIENT	0.30	0.3190

BEVEL	2.0415
GEAR FACE ANGLE (DEG)	73.2428
BEVEL FACE ANGLE (DEG)	22.2429
BEVEL CHAMFER	41.8154
GEAR DIA (mm)	101.84000
FLOOR APX TO CROWN ON PLEAS (mm)	58.1182
FLOOR APX TO CROWN ON GEAR (mm)	18.74544
FACE CHAMFER	0.24432
HUB CHAMFER	42.16216
HUB HUB FLOOR DIA (mm)	8.1120



Model

- Person Solid.pt
- 2nd Party
- Solid Bodies(2)
- Surface Bodies(2)
- View Master
- Origin
- Surface1
- Solid1
- End of Part



Spiral Bevel Gear Design Software Interface

STEP 1: INPUT REQUIRED DATA

22 GEAR HEEL PITCH DIAMETER (MM)	100.000
23 RATIO (PINION RPM / GEAR RPM)	2.84815
24 HAND OF SPIRAL (ON GEAR LEFT OR RIGHT)	LEFT

STEP 2: "Save as GLE 2" and CHECK COMMONLY USED

STEP 3: CORRECT IF NEEDED AND REPEAT STEP 2	COMMONLY USED
29 NUMBER OF TEETH ON GEAR	27
30 NUMBER OF TEETH ON PINION	10
31 GEAR FACE WIDTH (MM)	20
32 PRESSURE ANGLE (DEG)	22.5
33 SPIRAL ANGLE (DEG)	30
34 GEAR TRANSVERSAL TOOTH THICKNESS ON HEEL (MM)	4.9
35 ANGULAR BACKLASH ON GEAR (DEG)	0.15
36 GEAR COEFFICIENT OF ADDENDUM	0.9
37 COEFFICIENT OF TOOTH HEIGHT	2.15
38 SPIRAL TOOTH GENERATING DIAMETER (MM)	84
39 PROFILE CROWNING (MM)	0.005
40 LEAD CROWNING (MM)	0.03

STEP 3: CORRECT IF NEEDED AND REPEAT STEP 2

41 RATIO	2.84815
42 GEAR FACE ANGLE (DEG)	73.26245
43 PINION FACE ANGLE (DEG)	22.26275
44 PINION OD (MM)	42.58756
45 GEAR OD (MM)	121.64956
46 PITCH APEX TO CROWN ON PINION (MM)	59.11821
47 PITCH APEX TO CROWN ON GEAR (MM)	16.74385
48 ROOT CLEARANCE (MM)	0.54452
49 PINION HEEL PITCH DIAMETER (MM)	42.56216
50 PINION TRANSVERSAL TOOTH THICKNESS ON HEEL (MM)	5.17375

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