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"SCREW-WHEEL"

Program for the geometric calculation of a couple worm screw and helical wheel.

User manual

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Presentation

This program is used for calculate the essential data for the construction of a
couple worm screw and helical wheel pair

Is intended to gear manufacturers that the mechanical designers.
The calculation of the screw-wheel pair is not complicated in itself, but the justification of
this program is given by the fact that the pair imposing a distance between may recalculate
faster.

This operation made with the calculator, would require a long time because the calculation
is by trial and requires a number of cycles too long.
Thanks to computer speed this program performs a "Loop" calculation and takes you to
the results you want get.

Menu

File menu

Open:
Opens a data file stored on disk with the essential data and recalculates.

Save As:
Save a data file on disk naming.

Save:
During the 'running of the program saves the latest changes and overwrites the file.

Save a text file:
Save a text file with all the results.

Exit:
Exit and close the program.

Menu "Calculations"
        Calculates new pair

New distance between center:
        New distance: Changing Dp worm screw
        New distance :Change Dp wormwheel
        New distance: Change Z wormwheel
        Displays data.

Menu "Information"
        Version information of the program.

Menu "Calculations" Calculates new couple

You see this data entry window. Enter data as required:

Window with the results. Now you can:
Print results
Save the final results in text format
Save calculation data in a file to be stored or taken for further calculations.

```
Final data

Final data of the torque Screw - Gear

Transmition ratio                0,025
Normal module                    1
Circular module                  1,0002
Distance between centres         45,004
Helix angle                      1° 8' 46''
Pressure angle                   20°

                                 SCREW                    GEAR

N° of teeth                      1                        40
Outside diameter                 52                       42,008
Pitch diameter                   50                       40,008
Inside diameter                  47,5                     37,508
Normal pitch                     3,1416                   3,1416
Circular pitch                   3,1422                   3,1422
Helix pitch in axis              3,1422                   6283,1853

Roller diameter                  1
Screw roller diameter            49,6081
N° of teeth in                                            5
Corresponding chordal size
of the virtual helicoidal gear                           13,8451
Gear ball dimension                                      41,5775
Gear ball diameter                                       1,5
```

[Save in txt file]   [Print]   [Note]   [Cancel]

Menu "Calculations"Change between center - Pitch diameter changes worm screw

Selecting the menu shown above appears this input window
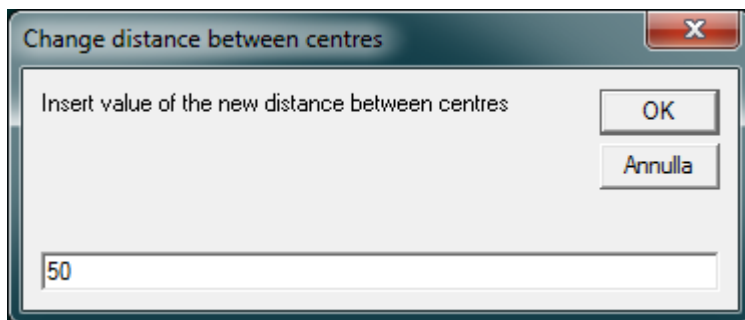
Change distance between centres

Insert value of the new distance between centres   [OK]

[Annulla]

45,0040012004001

For example in the field of introducing 50 new between center.

Change distance between centres

Insert value of the new distance between centres

OK

Annulla

50

Here are the results window with the new values

Final data

```
Final data of the torque Screw - Gear

Transmition ratio          0,025
Normal module              1
Circular module            1,0001
Distance between centres   49,9999
Helix angle                0° 57' 18''
Pressure angle             20°

                           SCREW                      GEAR

N° of teeth                1                          40
Outside diameter           61,9943                    42,0056
Pitch diameter             59,9943                    40,0056
Inside diameter            57,4943                    37,5056
Normal pitch               3,1416                     3,1416
Circular pitch             3,142                      3,142
Helix pitch in axis        3,142                      7539,1047


Roller diameter            1
Screw roller diameter      59,6024
N° of teeth in                                        5
Corresponding chordal size
of the virtual helicoidal gear                        13,845
Gear ball dimension                                   41,5751
Gear ball diameter                                    1,5
```

Save in txt file   Print   Note   Cancel

Menu "Calculations" Edit distance - change Pitch diameter wormwheel

Selecting the menu shown above appears this input window

Change distance between centres

Modificate PD of then gear. Enter new distance between centres

OK

Annulla

49,9999235278637
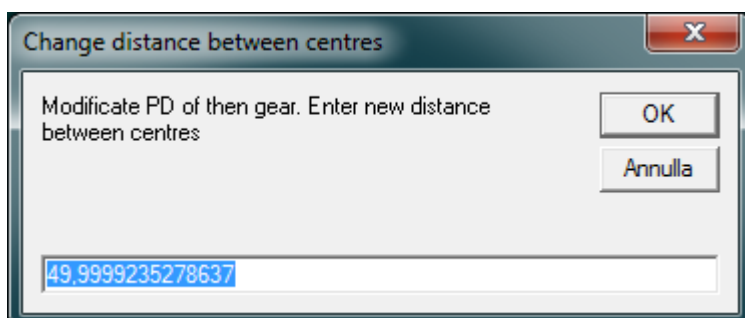
Enter a new distamce:

```
Change distance between centres                          [ X ]

Modificate PD of then gear. Enter new distance      [  OK  ]
between centres
                                                    [ Annulla ]


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```

New results window

```
Final data

 Final data of the torque Screw - Gear

 Transmition ratio              0,025
 Normal module                  1
 Circular module                1,0001
 Distance between centres       51
 Helix angle                    0° 57' 18''
 Pressure angle                 20°

                                SCREW                    GEAR

 N° of teeth                    1                        40
 Outside diameter               61,9943                  44,0057
 Pitch diameter                 59,9943                  42,0057
 Correct pitch diameter                                  40,0056
 Inside diameter                57,4943                  39,5057
 Correction on radius   Xm                               1,0001
 Normal pitch                   3,1416                   3,1416
 Circular pitch                 3,142                    3,142
 Helix pitch in axis            3,142                    7916,0364

 Roller diameter                1
 Screw roller diameter          59,6024
 N° of teeth in                                          6
 Corresponding chordal size
 of the virtual helicoidal gear                          17,4813
 Gear ball dimension                                     43,3081
 Gear ball diameter                                      1,5

      [ Save in txt file ]    [ Print ]    [ Note ]         [ Cancel ]
```

Menu "Calculations" **Edit distance - Change Z wormwheel**
As we have seen in the previus page: the change in distance caused a fix Or rather a
2.0012 mm profile shift "xm" on the radius of the wormwheel.
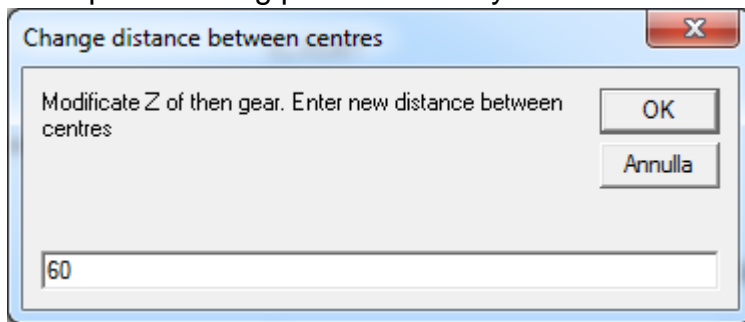That is to say it was increased Dp of 4.0024 mm wormwheel.
In essence, whether the change in distance is sought is contained within certain limits, a
correction is made on the wormwheel.
Otherwise you can change the distance by varying:
1 ° the number of teeth for wormwheel
2 ° the pitch diameter of the screw

Example resuming previous data: you want the distance becomes 60 mm

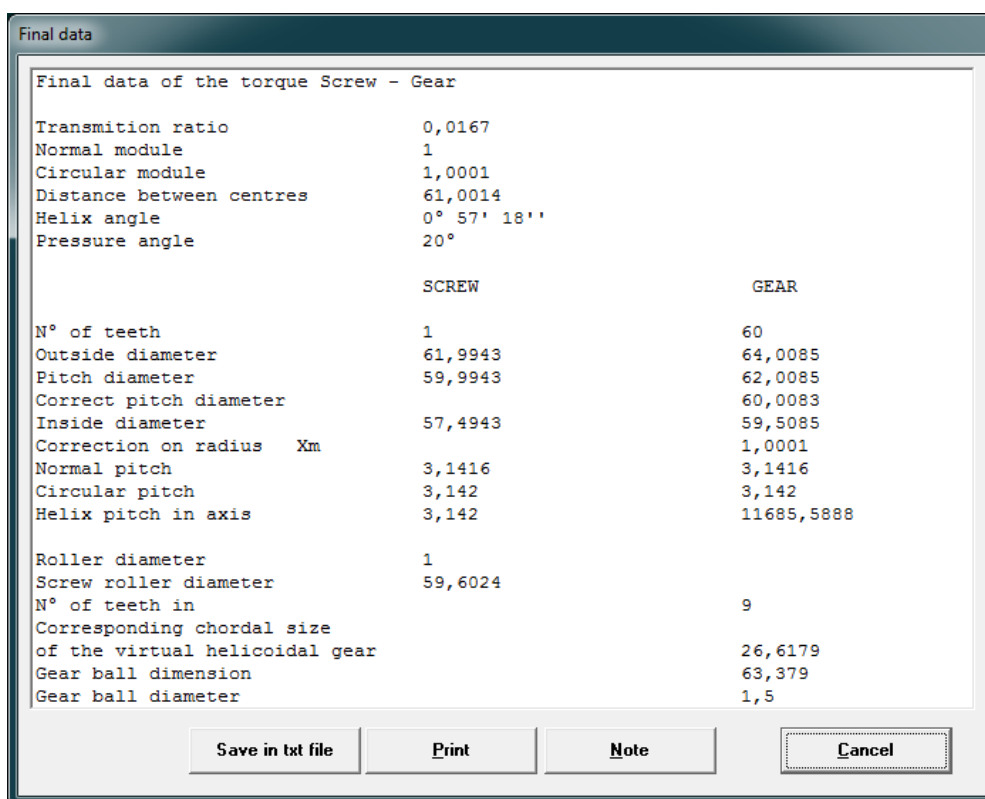**Change distance between centres**

Modificate Z of then gear. Enter new distance between centres

OK

Annulla

60

The program proposes a wormwheel with 60 teeth and a distance 61.0014

Final data

```
Final data of the torque Screw - Gear

Transmition ratio              0,0167
Normal module                  1
Circular module                1,0001
Distance between centres       61,0014
Helix angle                    0° 57' 18''
Pressure angle                 20°

                               SCREW                    GEAR

N° of teeth                    1                        60
Outside diameter               61,9943                  64,0085
Pitch diameter                 59,9943                  62,0085
Correct pitch diameter                                  60,0083
Inside diameter                57,4943                  59,5085
Correction on radius   Xm                               1,0001
Normal pitch                   3,1416                   3,1416
Circular pitch                 3,142                    3,142
Helix pitch in axis            3,142                    11685,5888

Roller diameter                1
Screw roller diameter          59,6024
N° of teeth in                                          9
Corresponding chordal size
of the virtual helicoidal gear                          26,6179
Gear ball dimension                                     63,379
Gear ball diameter                                      1,5
```

Save in txt file   Print   Note   Cancel

Final adjustment distance

Menu "Calculations"
Edit distance - change Dp screw , enter 60

```
Change distance between centres                        [ X ]

Modificate Z of then gear. Enter new distance between    [  OK   ]
centres
                                                         [ Annulla ]


60
```

Final results:

```
Final data

Final data of the torque Screw - Gear

Transmition ratio              0,0167
Normal module                  1
Circular module                1,0001
Distance between centres       60,0001
Helix angle                    0° 59' 17''
Pressure angle                 20°

                               SCREW                      GEAR

N° of teeth                    1                          60
Outside diameter               59,9911                    64,0091
Pitch diameter                 57,9911                    62,0091
Correct pitch diameter                                    60,0089
Inside diameter                55,4911                    59,5091
Correction on radius    Xm                                1,0001
Normal pitch                   3,1416                     3,1416
Circular pitch                 3,1421                     3,1421
Helix pitch in axis            3,1421                     11295,4117

Roller diameter                1
Screw roller diameter          57,5992
N° of teeth in                                            9
Corresponding chordal size
of the virtual helicoidal gear                            26,6179
Gear ball dimension                                       63,3795
Gear ball diameter                                        1,5

     [ Save in txt file ]   [ Print ]   [ Note ]   [ Cancel ]
```