

Solver-Ausgabe

ANSYS Mechanical Enterprise

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| W E L C O M E   T O   T H E   A N S Y S ( R )   P R O G R A M   |
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2020 R1

Point Releases and Patches installed:

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ANSYS, Inc. Products 2020 R1
SpaceClaim 2020 R1
AIM 2020 R1
Live (includes SpaceClaim) 2020 R1
Remote Solve Manager Standalone Services 2020 R1
Viewer 2020 R1
ACIS Geometry Interface 2020 R1
AutoCAD Geometry Interface 2020 R1
Catia, Version 4 Geometry Interface 2020 R1
Catia, Version 5 Geometry Interface 2020 R1
Catia, Version 6 Geometry Interface 2020 R1
Creo Elements/Direct Modeling Geometry Interface 2020 R1
Creo Parametric Geometry Interface 2020 R1
Inventor Geometry Interface 2020 R1
JTOpen Geometry Interface 2020 R1
NX Geometry Interface 2020 R1
Parasolid Geometry Interface 2020 R1
Solid Edge Geometry Interface 2020 R1
SOLIDWORKS Geometry Interface 2020 R1
ANSYS, Inc. License Manager 2020 R1
CFD-Post only 2020 R1
CFX (includes CFD-Post) 2020 R1
Chemkin 2020 R1
EnSight 2020 R1
FENSAP-ICE 2020 R1
Fluent (includes CFD-Post) 2020 R1
Forte 2020 R1
Polyflow (includes CFD-Post) 2020 R1
TurboGrid 2020 R1
Aqwa 2020 R1
Customization Files for User Programmable Features 2020 R1
Mechanical Products 2020 R1
Additive 2020 R1
ANSYS Sherlock 2020 R1
Icepak (includes CFD-Post) 2020 R1
ANSYS Remote Solve Manager Standalone Services 2020 R1

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***** ANSYS COMMAND LINE ARGUMENTS *****
BATCH MODE REQUESTED (-b) = NOLIST
INPUT FILE COPY MODE (-c) = COPY
DISTRIBUTED MEMORY PARALLEL REQUESTED
2 PARALLEL PROCESSES REQUESTED WITH SINGLE THREAD PER PROCESS
TOTAL OF 2 CORES REQUESTED
INPUT FILE NAME = C:\Users\koeh_mn\Documents\MK ANSYS\Vorpiilot ZiRa_ProjectScratch\Scr558B\dummy.dat
OUTPUT FILE NAME = C:\Users\koeh_mn\Documents\MK ANSYS\Vorpiilot ZiRa_ProjectScratch\Scr558B\solve.out
START-UP FILE MODE = NOREAD
STOP FILE MODE = NOREAD

RELEASE= 2020 R1 BUILD= 20.1 UP20191203 VERSION=WINDOWS x64
CURRENT JOBNAME=file0 00:41:44 MAY 12, 2021 CP= 0.312

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PARAMETER _DS_PROGRESS = 999.0000000

/INPUT FILE= ds.dat LINE= 0

*** NOTE *** CP = 0.406 TIME= 00:41:44
The /CONFIG,NOELDB command is not valid in a Distributed ANSYS
solution. Command is ignored.

*GET _WALLSTRT FROM ACTI ITEM=TIME WALL VALUE= 0.69555556

TITLE=
21-04-23_Vorpiilot_ZiRa_Laufradvariante_DP11_rev01--Statisch-mechanisch (E5)

SET PARAMETER DIMENSIONS ON _WB_PROJECTSCRATCH_DIR
TYPE=STRI DIMENSIONS= 248 1 1

PARAMETER _WB_PROJECTSCRATCH_DIR(1) = C:\Users\koeh_mn\Documents\MK ANSYS\Vorpiilot ZiRa\_ProjectScratch\Scr558B\

SET PARAMETER DIMENSIONS ON _WB_SOLVERFILES_DIR
TYPE=STRI DIMENSIONS= 248 1 1

PARAMETER _WB_SOLVERFILES_DIR(1) = C:\Users\koeh_mn\Documents\MK ANSYS\Vorpiilot ZiRa\21-04-23_Vorpiilot_ZiRa_Laufradvariante_DP11_rev01_files\dp0\SYS-
5\MECH\

SET PARAMETER DIMENSIONS ON _WB_USERFILES_DIR
TYPE=STRI DIMENSIONS= 248 1 1

PARAMETER _WB_USERFILES_DIR(1) = C:\Users\koeh_mn\Documents\MK ANSYS\Vorpiilot ZiRa\21-04-
23_Vorpiilot_ZiRa_Laufradvariante_DP11_rev01_files\User_files\
--- Data in consistent MKS units. See Solving Units in the help system for more

MKS UNITS SPECIFIED FOR INTERNAL
LENGTH (l) = METER (M)
MASS (M) = KILOGRAM (KG)
TIME (t) = SECOND (SEC)
TEMPERATURE (T) = CELSIUS (C)
TOFFSET = 273.0
CHARGE (Q) = COULOMB
FORCE (f) = NEWTON (N) (KG-M/SEC2)
HEAT = JOULE (N-M)

PRESSURE = PASCAL (NEWTON/M**2)
ENERGY (W) = JOULE (N-M)
POWER (P) = WATT (N-M/SEC)
CURRENT (i) = AMPERE (COULOMBS/SEC)
CAPACITANCE (C) = FARAD
INDUCTANCE (L) = HENRY
MAGNETIC FLUX = WEBER
RESISTANCE (R) = OHM
ELECTRIC POTENTIAL = VOLT

INPUT UNITS ARE ALSO SET TO MKS

*** ANSYS - ENGINEERING ANALYSIS SYSTEM RELEASE 2020 R1 20.1 ***
DISTRIBUTED ANSYS Mechanical Enterprise

00341487 VERSION=WINDOWS x64 00:41:44 MAY 12, 2021 CP= 0.422

21-04-23_Vorpiilot_ZiRa_Laufradvariante_DP11_rev01--Statisch-mechanisch (E5)

***** ANSYS ANALYSIS DEFINITION (PREP7) *****
***** Nodes for the whole assembly *****
***** Nodes for all Remote Points *****
***** Elements for Body 1 "Impeller" *****
***** Elements for Body 2 "Welle" *****
***** Elements for Body 3 "Scheibe" *****
***** Send User Defined Coordinate System(s) *****
***** Set Reference Temperature *****
***** Send Materials *****
***** Create Contact "Reibungsbehaftet - Impeller bis Scheibe" *****
Real Constant Set For Above Contact Is 5 & 4
***** Create Contact "Reibungsbehaftet - Impeller bis Welle" *****
Real Constant Set For Above Contact Is 7 & 6
***** Create Contact "Reibungsbehaftet - Welle bis Impeller" *****
Real Constant Set For Above Contact Is 9 & 8
***** Create Remote Point "Externer Punkt (intern)" *****
***** Create Remote Point "Externer Punkt (intern) 2" *****
***** Construct Remote Displacement *****
***** Construct Remote Displacement *****
*** Create a component for all remote displacements ***

***** ROUTINE COMPLETED ***** CP = 18.125

--- Number of total nodes = 3965989
--- Number of contact elements = 41665
--- Number of spring elements = 0
--- Number of bearing elements = 0
--- Number of solid elements = 2636988
--- Number of condensed parts = 0
--- Number of total elements = 2678655

*GET _WALLBSOL FROM ACTI ITEM=TIME WALL VALUE= 0.69916667
*****
***** SOLUTION *****
*****

***** ANSYS SOLUTION ROUTINE *****

PERFORM A STATIC ANALYSIS
THIS WILL BE A NEW ANALYSIS

PARAMETER _THICKRATIO = 1.000000000

USE PRECONDITIONED CONJUGATE GRADIENT SOLVER
CONVERGENCE TOLERANCE = 1.00000E-08
MAXIMUM ITERATION = NumNode*DofPerNode* 1.0000

MEMORY SAVING OPTION TURNED ON FOR PCG SOLVER

CONTACT INFORMATION PRINTOUT LEVEL 1

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DO NOT COMBINE ELEMENT MATRIX FILES (.emat) AFTER DISTRIBUTED PARALLEL SOLUTION
DO NOT COMBINE ELEMENT SAVE DATA FILES (.esav) AFTER DISTRIBUTED PARALLEL SOLUTION

NLDIAG: Nonlinear diagnostics CONT option is set to ON.
        Writing frequency : each ITERATION.

DEFINE RESTART CONTROL FOR LOADSTEP LAST
AT FREQUENCY OF LAST AND NUMBER FOR OVERWRITE IS  -1

DELETE RESTART FILES OF ENDSTEP
*****
***** SOLVE FOR LS 1 OF 1 *****

SPECIFIED CONSTRAINT UX  FOR SELECTED NODES      4250188 TO  4250188 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT UY  FOR SELECTED NODES      4250188 TO  4250188 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT UZ  FOR SELECTED NODES      4250188 TO  4250188 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT ROTX FOR SELECTED NODES      4250188 TO  4250188 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT ROTY FOR SELECTED NODES      4250188 TO  4250188 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT ROTZ FOR SELECTED NODES      4250188 TO  4250188 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT UX  FOR SELECTED NODES      4250189 TO  4250189 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT UY  FOR SELECTED NODES      4250189 TO  4250189 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT UZ  FOR SELECTED NODES      4250189 TO  4250189 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT ROTX FOR SELECTED NODES      4250189 TO  4250189 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT ROTY FOR SELECTED NODES      4250189 TO  4250189 BY      1
REAL=  0.00000000      IMAG=  0.00000000
SPECIFIED CONSTRAINT ROTZ FOR SELECTED NODES      4250189 TO  4250189 BY      1
REAL=  0.00000000      IMAG=  0.00000000

PRINTOUT RESUMED BY /GOP

USE AUTOMATIC TIME STEPPING THIS LOAD STEP

USE      5 SUBSTEPS INITIALLY THIS LOAD STEP FOR ALL DEGREES OF FREEDOM
FOR AUTOMATIC TIME STEPPING:
USE      5 SUBSTEPS AS A MAXIMUM
USE      5 SUBSTEPS AS A MINIMUM

TIME=  1.0000

ERASE THE CURRENT DATABASE OUTPUT CONTROL TABLE.

WRITE ALL ITEMS TO THE DATABASE WITH A FREQUENCY OF NONE
FOR ALL APPLICABLE ENTITIES

WRITE NSOL ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE RSOL ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE EANG ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE ETMP ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE VENG ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE STRS ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE EPFL ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE EPPL ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

WRITE CONT ITEMS TO THE DATABASE WITH A FREQUENCY OF ALL
FOR ALL APPLICABLE ENTITIES

*GET ANSINTER_ FROM ACTI ITEM=INT VALUE= 0.00000000
*IF ANSINTER_      ( = 0.00000 ) NE
0                  ( = 0.00000 ) THEN

*ENDIF

*** NOTE *** CP = 18.734 TIME= 00:41:57
The automatic domain decomposition logic has selected the MESH domain
decomposition method with 2 processes per solution.

**** ANSYS SOLVE COMMAND ****

*** WARNING *** CP = 19.547 TIME= 00:41:57
Element shape checking is currently inactive. Issue SHPP,ON or
SHPP,WARN to reactivate, if desired.

*** NOTE *** CP = 31.219 TIME= 00:42:04
The model data was checked and warning messages were found.
Please review output or errors file ( C:\Users\koeh_mn\Documents\MK
ANSYS\Vorpilot ZiRa\ProjectScratch\Scr558B\file0.err ) for these
warning messages.

*** SELECTION OF ELEMENT TECHNOLOGIES FOR APPLICABLE ELEMENTS ***

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--- GIVE SUGGESTIONS AND RESET THE KEY OPTIONS ---

ELEMENT TYPE 1 IS SOLID187. IT IS NOT ASSOCIATED WITH FULLY INCOMPRESSIBLE
HYPERELASTIC MATERIALS. NO SUGGESTION IS AVAILABLE AND NO RESETTING IS NEEDED.

ELEMENT TYPE 2 IS SOLID187. IT IS NOT ASSOCIATED WITH FULLY INCOMPRESSIBLE
HYPERELASTIC MATERIALS. NO SUGGESTION IS AVAILABLE AND NO RESETTING IS NEEDED.

ELEMENT TYPE 3 IS SOLID186. KEYOPT(2)=0 IS SUGGESTED AND HAS BEEN RESET.
KEYOPT(1-12)= 0 0 0 0 0 0 0 0 0 0 0 0

*** ANSYS - ENGINEERING ANALYSIS SYSTEM RELEASE 2020 R1 20.1 ***
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00341487 VERSION=WINDOWS x64 00:42:05 MAY 12, 2021 CP= 31.703

21-04-23_Vorpiilot_ZiRa_Laufradvariante_DP11_rev01--Statisch-mechanisch (E5)

S O L U T I O N O P T I O N S

PROBLEM DIMENSIONALITY.3-D
DEGREES OF FREEDOM.UX UY UZ ROTX ROTY ROTZ
ANALYSIS TYPE.STATIC (STEADY-STATE)
OFFSET TEMPERATURE FROM ABSOLUTE ZERO.273.15
EQUATION SOLVER OPTION.PCG
MEMORY SAVING OPTION.ON
TOLERANCE.1.00000E-08
NEWTON-RAPHSON OPTION.PROGRAM CHOSEN
GLOBALLY ASSEMBLED MATRIX.SYMMETRIC

*** NOTE *** CP = 33.031 TIME= 00:42:06
This nonlinear analysis defaults to using the full Newton-Raphson
solution procedure. This can be modified using the NPROPT command.

*** NOTE *** CP = 33.031 TIME= 00:42:06
The conditions for direct assembly have been met. No .emat or .erot
files will be produced.

*** NOTE *** CP = 34.953 TIME= 00:42:08
Internal nodes from 4250190 to 4250191 are created.
2 internal nodes are used for handling degrees of freedom on pilot
nodes of rigid target surfaces.

*** NOTE *** CP = 37.688 TIME= 00:42:10
Internal nodes from 4250190 to 4250191 are created.
2 internal nodes are used for handling degrees of freedom on pilot
nodes of rigid target surfaces.

*** NOTE *** CP = 39.844 TIME= 00:42:11
Smoothing on certain contact nodes (e.g.50110) for pair ID 12 may have
accuracy issue. Please verify element normal of connected contact
elements (e.g.3316458 & 3316993).

*** NOTE *** CP = 40.562 TIME= 00:42:12
Symmetric Deformable- deformable contact pair identified by real
constant set 4 and contact element type 4 has been set up. The
companion pair has real constant set ID 5. Both pairs should have the
same behavior.
ANSYS will keep the current pair and deactivate its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN 1.0000
The resulting initial contact stiffness 0.80066E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance 0.38474E-04
Max. initial friction coefficient MU 0.10000
Default tangent stiffness factor FKT 1.0000
Default elastic slip factor SLTOL 0.10000E-01
The resulting elastic slip tolerance 0.53719E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX 0.10000E+21
Average contact surface length 0.53719E-03
Average contact pair depth 0.38474E-03
Default pinball region factor PINB 1.0000
The resulting pinball region 0.38474E-03
WARNING: Initial penetration is included.

*** NOTE *** CP = 40.562 TIME= 00:42:12
Max. Initial penetration 1.734723476E-18 was detected between contact
element 3276450 and target element 3278656.

*** NOTE *** CP = 40.562 TIME= 00:42:12
Symmetric Deformable- deformable contact pair identified by real
constant set 5 and contact element type 4 has been set up. The
companion pair has real constant set ID 4. Both pairs should have the
same behavior.
ANSYS will deactivate the current pair and keep its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN 1.0000
The resulting initial contact stiffness 0.80066E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance 0.49959E-04
Max. initial friction coefficient MU 0.10000
Default tangent stiffness factor FKT 1.0000
Default elastic slip factor SLTOL 0.10000E-01
The resulting elastic slip tolerance 0.41647E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX 0.10000E+21
Average contact surface length 0.41647E-03
Average contact pair depth 0.49959E-03
Default pinball region factor PINB 1.0000
The resulting pinball region 0.49959E-03
WARNING: Initial penetration is included.

*** NOTE *** CP = 40.562 TIME= 00:42:12
Max. Initial penetration 5.204170428E-18 was detected between contact
element 3277400 and target element 3276308.

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Symmetric Deformable- deformable contact pair identified by real
constant set 6 and contact element type 6 has been set up. The
companion pair has real constant set ID 7. Both pairs should have the
same behavior.
ANSYS will keep the current pair and deactivate its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN                0.50000
The resulting initial contact stiffness    0.51986E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance        0.37400E-04
Max. initial friction coefficient MU        0.10000
Default tangent stiffness factor FKT       1.0000
Use constant contact stiffness
Default Max. friction stress TAUMAX        0.10000E+21
Average contact surface length             0.49587E-03
Average contact pair depth                 0.37400E-03
Default pinball region factor PINB         1.0000
The resulting pinball region              0.37400E-03
*WARNING*: Initial penetration is included.

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Max. Initial penetration 1.000169056E-05 was detected between contact
element 3294693 and target element 3306446.
You may move entire target surface by : x= 8.132566734E-06, y=
-5.821956068E-06, z= -2.500226382E-11, to reduce initial penetration.
*****

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Symmetric Deformable- deformable contact pair identified by real
constant set 7 and contact element type 6 has been set up. The
companion pair has real constant set ID 6. Both pairs should have the
same behavior.
ANSYS will deactivate the current pair and keep its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN                0.50000
The resulting initial contact stiffness    0.51986E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance        0.38472E-04
Max. initial friction coefficient MU        0.10000
Default tangent stiffness factor FKT       1.0000
Use constant contact stiffness
Default Max. friction stress TAUMAX        0.10000E+21
Average contact surface length             0.49692E-03
Average contact pair depth                 0.38472E-03
Default pinball region factor PINB         1.0000
The resulting pinball region              0.38472E-03
*WARNING*: Initial penetration is included.

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Max. Initial penetration 1.000170859E-05 was detected between contact
element 3298622 and target element 3287073.
You may move entire target surface by : x= -7.714268808E-06, y=
6.365864556E-06, z= -1.96307647E-13, to reduce initial penetration.
*****

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Symmetric Deformable- deformable contact pair identified by real
constant set 8 and contact element type 8 has been set up. The
companion pair has real constant set ID 9. Both pairs should have the
same behavior.
ANSYS will keep the current pair and deactivate its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN                0.50000
The resulting initial contact stiffness    0.52430E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance        0.38146E-04
Max. initial friction coefficient MU        0.10000
Default tangent stiffness factor FKT       1.0000
Default elastic slip factor SLTOL          0.10000E-01
The resulting elastic slip tolerance       0.52006E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX        0.10000E+21
Average contact surface length             0.52006E-03
Average contact pair depth                 0.38146E-03
Default pinball region factor PINB         1.0000
The resulting pinball region              0.38146E-03
*WARNING*: Initial penetration is included.

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Max. Initial penetration 2.081668171E-17 was detected between contact
element 3311237 and target element 3312366.
*****

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*** NOTE ***                CP =      40.562    TIME= 00:42:12
Symmetric Deformable- deformable contact pair identified by real
constant set 9 and contact element type 8 has been set up. The
companion pair has real constant set ID 8. Both pairs should have the
same behavior.
ANSYS will deactivate the current pair and keep its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN                0.50000
The resulting initial contact stiffness    0.52430E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance        0.37545E-04
Max. initial friction coefficient MU        0.10000
Default tangent stiffness factor FKT       1.0000
Default elastic slip factor SLTOL          0.10000E-01
The resulting elastic slip tolerance       0.52581E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX        0.10000E+21
Average contact surface length             0.52581E-03

```

Average contact pair depth 0.37545E-03
 Default pinball region factor PINB 1.0000
 The resulting pinball region 0.37545E-03
 WARNING: Initial penetration is included.

*** NOTE *** CP = 40.562 TIME= 00:42:12
 Max. Initial penetration 2.775557562E-17 was detected between contact
 element 3311738 and target element 3310537.

*** NOTE *** CP = 40.562 TIME= 00:42:12
 Force-distributed-surface identified by real constant set 10 and
 contact element type 10 has been set up. The pilot node 4250188 is
 used to apply the force. Internal MPC will be built.
 The used degrees of freedom set is UX UY UZ ROTX ROTY ROTZ
 Please verify constraints (including rotational degrees of freedom)
 on the pilot node by yourself.

*** NOTE *** CP = 40.562 TIME= 00:42:12
 Force-distributed-surface identified by real constant set 12 and
 contact element type 12 has been set up. The pilot node 4250189 is
 used to apply the force. Internal MPC will be built.
 The used degrees of freedom set is UX UY UZ ROTX ROTY ROTZ
 Please verify constraints (including rotational degrees of freedom)
 on the pilot node by yourself.

*** NOTE *** CP = 42.422 TIME= 00:42:13
 Internal nodes from 4250190 to 4250191 are created.
 2 internal nodes are used for handling degrees of freedom on pilot
 nodes of rigid target surfaces.

D I S T R I B U T E D D O M A I N D E C O M P O S E R

...Number of elements: 2678655
 ...Number of nodes: 3965991
 ...Decompose to 2 CPU domains
 ...Element load balance ratio = 1.005

L O A D S T E P O P T I O N S

LOAD STEP NUMBER. 1
 TIME AT END OF THE LOAD STEP. 1.0000
 AUTOMATIC TIME STEPPING ON
 INITIAL NUMBER OF SUBSTEPS 5
 MAXIMUM NUMBER OF SUBSTEPS 5
 MINIMUM NUMBER OF SUBSTEPS 5
 MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS. 15
 STEP CHANGE BOUNDARY CONDITIONS NO
 TERMINATE ANALYSIS IF NOT CONVERGED YES (EXIT)
 CONVERGENCE CONTROLS. USE DEFAULTS
 PRINT OUTPUT CONTROLS NO PRINTOUT
 DATABASE OUTPUT CONTROLS
 ITEM FREQUENCY COMPONENT
 ALL NONE
 NSOL ALL
 RSOL ALL
 EANG ALL
 ETMP ALL
 VENG ALL
 STRS ALL
 EPEL ALL
 EPPL ALL
 CONT ALL

SOLUTION MONITORING INFO IS WRITTEN TO FILE=
 file.mntr

*** NOTE *** CP = 72.484 TIME= 00:42:35
 Symmetric Deformable- deformable contact pair identified by real
 constant set 4 and contact element type 4 has been set up. The
 companion pair has real constant set ID 5. Both pairs should have the
 same behavior.
 ANSYS will keep the current pair and deactivate its companion pair,
 resulting in asymmetric contact.
 Small sliding logic is assumed
 Contact algorithm: Augmented Lagrange method
 Contact detection at: Gauss integration point
 Contact stiffness factor FKN 1.0000
 The resulting initial contact stiffness 0.80066E+16
 Default penetration tolerance factor FTOLN 0.10000
 The resulting penetration tolerance 0.38474E-04
 Max. initial friction coefficient MU 0.10000
 Default tangent stiffness factor FKT 1.0000
 Default elastic slip factor SLTOL 0.10000E-01
 The resulting elastic slip tolerance 0.53719E-05
 Update contact stiffness at each iteration
 Default Max. friction stress TAUMAX 0.10000E+21
 Average contact surface length 0.53719E-03
 Average contact pair depth 0.38474E-03
 Default pinball region factor PINB 1.0000
 The resulting pinball region 0.38474E-03
 WARNING: Initial penetration is included.

*** NOTE *** CP = 72.484 TIME= 00:42:35
 Max. Initial penetration 1.734723476E-18 was detected between contact
 element 3276450 and target element 3278656.

*** NOTE *** CP = 72.484 TIME= 00:42:35
 Symmetric Deformable- deformable contact pair identified by real
 constant set 5 and contact element type 4 has been set up. The
 companion pair has real constant set ID 4. Both pairs should have the
 same behavior.
 ANSYS will deactivate the current pair and keep its companion pair,
 resulting in asymmetric contact.
 Small sliding logic is assumed

```

Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN          1.0000
The resulting initial contact stiffness 0.80066E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance    0.49959E-04
Max. initial friction coefficient MU   0.10000
Default tangent stiffness factor FKT   1.0000
Default elastic slip factor SLTOL     0.10000E-01
The resulting elastic slip tolerance   0.41647E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX   0.10000E+21
Average contact surface length        0.41647E-03
Average contact pair depth            0.49959E-03
Default pinball region factor PINB    1.0000
The resulting pinball region          0.49959E-03
*WARNING*: Initial penetration is included.

*** NOTE ***                      CP =      72.484  TIME= 00:42:35
Max. Initial penetration 5.204170428E-18 was detected between contact
element 3277400 and target element 3276308.
*****

*** NOTE ***                      CP =      72.484  TIME= 00:42:35
Symmetric Deformable- deformable contact pair identified by real
constant set 8 and contact element type 8 has been set up. The
companion pair has real constant set ID 9. Both pairs should have the
same behavior.
ANSYS will keep the current pair and deactivate its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN          0.50000
The resulting initial contact stiffness 0.52430E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance    0.38146E-04
Max. initial friction coefficient MU   0.10000
Default tangent stiffness factor FKT   1.0000
Default elastic slip factor SLTOL     0.10000E-01
The resulting elastic slip tolerance   0.52006E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX   0.10000E+21
Average contact surface length        0.52006E-03
Average contact pair depth            0.38146E-03
Default pinball region factor PINB    1.0000
The resulting pinball region          0.38146E-03
*WARNING*: Initial penetration is included.

*** NOTE ***                      CP =      72.484  TIME= 00:42:35
Max. Initial penetration 2.081668171E-17 was detected between contact
element 3311237 and target element 3312366.
*****

*** NOTE ***                      CP =      72.484  TIME= 00:42:35
Symmetric Deformable- deformable contact pair identified by real
constant set 9 and contact element type 8 has been set up. The
companion pair has real constant set ID 8. Both pairs should have the
same behavior.
ANSYS will deactivate the current pair and keep its companion pair,
resulting in asymmetric contact.
Small sliding logic is assumed
Contact algorithm: Augmented Lagrange method
Contact detection at: Gauss integration point
Contact stiffness factor FKN          0.50000
The resulting initial contact stiffness 0.52430E+16
Default penetration tolerance factor FTOLN 0.10000
The resulting penetration tolerance    0.37545E-04
Max. initial friction coefficient MU   0.10000
Default tangent stiffness factor FKT   1.0000
Default elastic slip factor SLTOL     0.10000E-01
The resulting elastic slip tolerance   0.52581E-05
Update contact stiffness at each iteration
Default Max. friction stress TAUMAX   0.10000E+21
Average contact surface length        0.52581E-03
Average contact pair depth            0.37545E-03
Default pinball region factor PINB    1.0000
The resulting pinball region          0.37545E-03
*WARNING*: Initial penetration is included.

*** NOTE ***                      CP =      72.484  TIME= 00:42:35
Max. Initial penetration 2.775557562E-17 was detected between contact
element 3311738 and target element 3310537.
*****

MAXIMUM NUMBER OF EQUILIBRIUM ITERATIONS HAS BEEN MODIFIED
TO BE, NEQIT = 25, BY SOLUTION CONTROL LOGIC.

*** WARNING ***                   CP =      76.828  TIME= 00:42:39
Too many nodes 8555 are included in the force-distributed-surface
constraint identified by real constant set 10. This may greatly
affect solver performance due to large wave fronts and memory
consumption. Also check results carefully and consider solving with a
different unit system.

*** NOTE ***                      CP =      82.250  TIME= 00:42:45
The PCG solver has automatically set the level of difficulty for this
model to 2.

The FEA model contains 0 external CE equations and 12 internal CE
equations.

*****
SUMMARY FOR CONTACT PAIR IDENTIFIED BY REAL CONSTANT SET          4
Max. Penetration of -1.734723476E-18 has been detected between contact
element 3276926 and target element 3278560.
For total 566 contact elements, there are 551 elements are in contact.
There are 551 elements are in sticking.
Contacting area 4.105466886E-05.
Max. Pinball distance 3.847431511E-04.
One of the contact searching regions contains at least 32 target
elements.
Max. Pressure/force 5.102778805E-03.
Max. Normal stiffness 2.941551709E+15.
Min. Normal stiffness 2.941551709E+15.
Max. Tangential stiffness 1.580085956E+13.

```

Min. Tangential stiffness 1.580085956E+13.

SUMMARY FOR CONTACT PAIR IDENTIFIED BY REAL CONSTANT SET 5

*** NOTE *** CP = 246.438 TIME= 00:45:32
Contact pair is inactive.

SUMMARY FOR CONTACT PAIR IDENTIFIED BY REAL CONSTANT SET 8
Max. Penetration of -1.387778781E-17 has been detected between contact element 3311315 and target element 3312459.
For total 560 contact elements, there are 365 elements are in contact.
There are 365 elements are in sticking.
Contacting area 2.018527111E-05.
Max. Pinball distance 3.814634164E-04.
One of the contact searching regions contains at least 36 target elements.
Max. Pressure/force 2.871480576E-02.
Max. Normal stiffness 2.069119817E+15.
Min. Normal stiffness 2.069119817E+15.
Max. Tangential stiffness 1.138281689E+13.
Min. Tangential stiffness 1.138281689E+13.

SUMMARY FOR CONTACT PAIR IDENTIFIED BY REAL CONSTANT SET 9

*** NOTE *** CP = 246.438 TIME= 00:45:32
Contact pair is inactive.

***** PRECISE MASS SUMMARY *****

TOTAL RIGID BODY MASS MATRIX ABOUT ORIGIN

Translational mass			Coupled translational/rotational mass		
0.68950	0.0000	0.0000	0.0000	0.25758E-01	-0.35379E-09
0.0000	0.68950	0.0000	-0.25758E-01	0.0000	0.24311E-08
0.0000	0.0000	0.68950	0.35379E-09	-0.24311E-08	0.0000
-----			-----		
			Rotational mass (inertia)		
			0.15210E-02	0.25191E-10	-0.97701E-10
			0.25191E-10	0.15210E-02	0.12275E-10
			-0.97701E-10	0.12275E-10	0.80398E-03

TOTAL MASS = 0.68950
The mass principal axes coincide with the global Cartesian axes
CENTER OF MASS (X,Y,Z)= 0.35260E-08 0.51312E-09 0.37358E-01

TOTAL INERTIA ABOUT CENTER OF MASS
0.55875E-03 0.25191E-10 -0.68787E-11
0.25191E-10 0.55875E-03 0.25492E-10
-0.68787E-11 0.25492E-10 0.80398E-03
The inertia principal axes coincide with the global Cartesian axes

*** MASS SUMMARY BY ELEMENT TYPE ***

TYPE	MASS
1	0.569051
2	0.113049
3	0.739845E-02

Range of element maximum matrix coefficients in global coordinates
Maximum = 1.65281908E+09 at element 236253.
Minimum = 10963064.6 at element 3311510.

*** ELEMENT MATRIX FORMULATION TIMES

TYPE	NUMBER	ENAME	TOTAL CP	AVE CP
1	2400530	SOLID187	244.250	0.000102
2	225570	SOLID187	23.594	0.000105
3	10888	SOLID186	2.000	0.000184
4	1849	CONTA174	0.281	0.000152
5	1849	TARGE170	0.031	0.000017
6	15442	CONTA174	1.625	0.000105
7	15442	TARGE170	0.203	0.000013
8	1151	CONTA174	0.125	0.000109
9	1151	TARGE170	0.016	0.000014
10	3627	CONTA174	0.156	0.000043
11	1	TARGE170	0.000	0.000000
12	1154	CONTA174	0.047	0.000041
13	1	TARGE170	0.000	0.000000

Time at end of element matrix formulation CP = 246.59375.

ALL CURRENT ANSYS DATA WRITTEN TO FILE NAME= file.rdb
FOR POSSIBLE RESUME FROM THIS POINT

FORCE CONVERGENCE VALUE = 0.5579E+06 CRITERION= 9.846

Iteration	Ratio	Limit	Wall
curEqn= 114292	totEqn= 122212	Job CP sec=	276.500
Factor Done= 53%	Factor Wall sec=	3.594	rate= 20710.3 Mflops
curEqn= 122212	totEqn= 122212	Job CP sec=	278.312
Factor Done= 100%	Factor Wall sec=	5.425	rate= 26069.5 Mflops
Iteration= 10	Ratio= 0.242563	Limit= 1.000000E-08	Wall= 6.5
Iteration= 90	Ratio= 8.149112E-04	Limit= 1.000000E-08	Wall= 70.5
Iteration= 195	Ratio= 2.172012E-04	Limit= 1.000000E-08	Wall= 152.9
Iteration= 300	Ratio= 1.734066E-04	Limit= 1.000000E-08	Wall= 235.7
Iteration= 405	Ratio= 4.344110E-05	Limit= 1.000000E-08	Wall= 318.1
Iteration= 510	Ratio= 9.685540E-05	Limit= 1.000000E-08	Wall= 399.6
Iteration= 615	Ratio= 8.440700E-06	Limit= 1.000000E-08	Wall= 482.8
Iteration= 720	Ratio= 7.588347E-06	Limit= 1.000000E-08	Wall= 564.8
Iteration= 825	Ratio= 3.358912E-06	Limit= 1.000000E-08	Wall= 647.0
Iteration= 860	Ratio= 3.008922E-06	Limit= 1.000000E-08	Wall= 674.0
Iteration= 965	Ratio= 2.929170E-06	Limit= 1.000000E-08	Wall= 754.9
Iteration= 1070	Ratio= 5.885507E-06	Limit= 1.000000E-08	Wall= 835.9
Iteration= 1175	Ratio= 1.978254E-06	Limit= 1.000000E-08	Wall= 917.2
Iteration= 1280	Ratio= 5.612038E-06	Limit= 1.000000E-08	Wall= 997.4
Iteration= 1385	Ratio= 1.864954E-06	Limit= 1.000000E-08	Wall= 1078.4
Iteration= 1490	Ratio= 1.670577E-06	Limit= 1.000000E-08	Wall= 1158.9
Iteration= 1595	Ratio= 1.583701E-06	Limit= 1.000000E-08	Wall= 1239.9
Iteration= 1700	Ratio= 1.048410E-06	Limit= 1.000000E-08	Wall= 1320.5
Iteration= 1805	Ratio= 4.293963E-07	Limit= 1.000000E-08	Wall= 1401.1
Iteration= 1910	Ratio= 2.702306E-07	Limit= 1.000000E-08	Wall= 1481.8
Iteration= 2015	Ratio= 8.781615E-07	Limit= 1.000000E-08	Wall= 1563.2
Iteration= 2120	Ratio= 3.954129E-08	Limit= 1.000000E-08	Wall= 1643.9
Iteration= 2225	Ratio= 1.272373E-08	Limit= 1.000000E-08	Wall= 1724.3

DISTRIBUTED PCG SOLVER SOLUTION CONVERGED

DISTRIBUTED PCG SOLVER SOLUTION STATISTICS

NUMBER OF DOMAINS = 3348
 NUMBER OF ITERATIONS= 2244
 NUMBER OF EQUATIONS = 11897985
 LEVEL OF CONVERGENCE= 1
 CALCULATED NORM = 0.98308E-08
 SPECIFIED TOLERANCE = 0.10000E-07
 TOTAL CPU TIME (sec)= 1749.42
 TOTAL WALL TIME(sec)= 1753.07
 TOTAL MEMORY (GB) = 2.96

DISP CONVERGENCE VALUE = 0.7854E-05 CRITERION= 0.4007E-07
 EQUIL ITER 1 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.7854E-05
 DISP CONVERGENCE VALUE = 0.7854E-05 CRITERION= 0.5206E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.7854E-05
 FORCE CONVERGENCE VALUE = 247.9 CRITERION= 0.3717E-01
 EQUIL ITER 2 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.1095E-05
 DISP CONVERGENCE VALUE = 0.1095E-05 CRITERION= 0.5312E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.1095E-05
 FORCE CONVERGENCE VALUE = 118.9 CRITERION= 0.6996E-01
 EQUIL ITER 3 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.7261E-06
 DISP CONVERGENCE VALUE = 0.7261E-06 CRITERION= 0.5421E-06
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.7261E-06
 FORCE CONVERGENCE VALUE = 69.55 CRITERION= 0.3748E-01
 EQUIL ITER 4 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.4020E-06
 DISP CONVERGENCE VALUE = 0.4020E-06 CRITERION= 0.5531E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.4020E-06
 FORCE CONVERGENCE VALUE = 41.85 CRITERION= 0.3805E-01
 EQUIL ITER 5 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.1908E-06
 DISP CONVERGENCE VALUE = 0.1908E-06 CRITERION= 0.5644E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.1908E-06
 FORCE CONVERGENCE VALUE = 24.09 CRITERION= 0.3878E-01
 EQUIL ITER 6 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.1479E-06
 DISP CONVERGENCE VALUE = 0.1479E-06 CRITERION= 0.5760E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.1479E-06
 FORCE CONVERGENCE VALUE = 13.06 CRITERION= 0.3955E-01
 EQUIL ITER 7 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.3576E-06
 DISP CONVERGENCE VALUE = 0.3576E-06 CRITERION= 0.5877E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = 0.3576E-06
 FORCE CONVERGENCE VALUE = 6.730 CRITERION= 0.4035E-01
 EQUIL ITER 8 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.2736E-06
 DISP CONVERGENCE VALUE = 0.2736E-06 CRITERION= 0.5997E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = 0.2736E-06
 FORCE CONVERGENCE VALUE = 3.315 CRITERION= 0.4117E-01
 EQUIL ITER 9 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.4497E-06
 DISP CONVERGENCE VALUE = 0.4497E-06 CRITERION= 0.6119E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = 0.4497E-06
 FORCE CONVERGENCE VALUE = 1.607 CRITERION= 0.4201E-01
 EQUIL ITER 10 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= 0.8456E-06
 DISP CONVERGENCE VALUE = 0.8456E-06 CRITERION= 0.6244E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = 0.8456E-06
 FORCE CONVERGENCE VALUE = 0.7924 CRITERION= 0.4286E-01
 EQUIL ITER 11 COMPLETED. NEW TRIANG MATRIX. MAX DOF INC= -0.1931E-05
 DISP CONVERGENCE VALUE = 0.1931E-05 CRITERION= 0.6372E-07
 LINE SEARCH PARAMETER = 1.000 SCALED MAX DOF INC = -0.1931E-05
 FORCE CONVERGENCE VALUE = 0.3981 CRITERION= 0.4374E-01