```
--------------------------------------------------------------------------
WARNING: Linux kernel CMA support was requested via the
btl_vader_single_copy_mechanism MCA variable, but CMA support is
not available due to restrictive ptrace settings.

The vader shared memory BTL will fall back on another single-copy
mechanism if one is available. This may result in lower performance.

  Local host: OHDACHI-PC
--------------------------------------------------------------------------
/*---------------------------------------------------------------------------*\
  =========                 |
  \\      /  F ield         | OpenFOAM: The Open Source CFD Toolbox
   \\    /   O peration     | Website:  https://openfoam.org
    \\  /    A nd           | Version:  8
     \\/     M anipulation  |
\*---------------------------------------------------------------------------*/
Build  : 8-1c9b5879390b
Exec   : snappyHexMesh -parallel -overwrite
Date   : Aug 06 2021
Time   : 10:52:07
Host   : "OHDACHI-PC"
PID    : 940
I/O    : uncollated
Case   : /home/kentaohdachi/CarModel
nProcs : 6
Slaves :
5
(
"OHDACHI-PC.941"
"OHDACHI-PC.942"
"OHDACHI-PC.943"
"OHDACHI-PC.944"
"OHDACHI-PC.945"
)

Pstream initialized with:
    floatTransfer      : 0
    nProcsSimpleSum    : 0
    commsType          : nonBlocking
    polling iterations : 0
sigFpe : Enabling floating point exception trapping (FOAM_SIGFPE).
fileModificationChecking : Monitoring run-time modified files using
timeStampMaster (fileModificationSkew 10)
allowSystemOperations : Allowing user-supplied system call operations

// * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * //
Create time

Create mesh for time = 0

Read mesh in = 0.01 s

Overall mesh bounding box  : (-3.78 -5.04 -0.06) (26.22 4.96 9.94)
Relative tolerance         : 1e-06
Absolute matching distance : 3.31662e-05

Reading refinement surfaces.
```

```
Read refinement surfaces in = 1.82 s

Reading refinement shells.
Refinement level 4 for all cells inside refinementBox
Read refinement shells in = 0 s

Setting refinement level of surface to be consistent with shells.
Checked shell refinement in = 0 s

Reading features.
Read edgeMesh motorBike.eMesh
    points      : 5129
    edges       : 5218
    boundingBox : (-0.32675 -0.84 -0.06) (3.22276 0.76 0.795673)

Refinement level according to distance to "motorBike.eMesh" (5129 points, 5218
edges).
    level 7 for all cells within 0 metre.
Read features in = 0 s


Determining initial surface intersections
-----------------------------------------

Edge intersection testing:
    Number of edges             : 9700
    Number of edges to retest   : 9700
    Number of intersected edges : 28
Calculated surface intersections in = 0.81 s

Initial mesh : cells:3000  faces:9700  points:3751
Cells per refinement level:
    0   3000

Adding patches for surface regions
----------------------------------

Patch Type                Region
----- ----                ------
motorBike:

[5] Selecting decompositionMethod hierarchical
[1] Selecting decompositionMethod hierarchical
5     wall                motorBike

Added patches in = 0 s

[2] Selecting decompositionMethod hierarchical
[3] Selecting decompositionMethod hierarchical
[0] Selecting decompositionMethod hierarchical
[4] Selecting decompositionMethod hierarchical
Layer thickness specified as final layer and expansion ratio.

Refinement phase
----------------

Found point (3.0001 3.0001 0.43) in cell 36 on processor 3
```

```
Feature refinement iteration 0
------------------------------

Marked for refinement due to explicit features             : 10 cells.
Determined cells to refine in = 0.02 s
Selected for feature refinement : 10 cells (out of 3000)
Edge intersection testing:
    Number of edges             : 9961
    Number of edges to retest   : 405
    Number of intersected edges : 107
Refined mesh in = 0 s
After refinement feature refinement iteration 0 : cells:3070  faces:9961
points:3880
Cells per refinement level:
    0   2990
    1   80
Skipping balancing since max unbalance 0.0469667 is less than allowable 0.1

Feature refinement iteration 1
------------------------------

Marked for refinement due to explicit features             : 39 cells.
Determined cells to refine in = 0.01 s
Selected for feature refinement : 57 cells (out of 3070)
Edge intersection testing:
    Number of edges             : 11404
    Number of edges to retest   : 1955
    Number of intersected edges : 278
Refined mesh in = 0.02 s
After refinement feature refinement iteration 1 : cells:3469  faces:11404
points:4550
Cells per refinement level:
    0   2972
    1   185
    2   312
Balanced mesh in = 0.01 s
After balancing feature refinement iteration 1 : cells:3469  faces:11404
points:4550
Cells per refinement level:
    0   2972
    1   185
    2   312

Feature refinement iteration 2
------------------------------

Marked for refinement due to explicit features             : 135 cells.
Determined cells to refine in = 0.02 s
Selected for feature refinement : 192 cells (out of 3469)
Edge intersection testing:
    Number of edges             : 16102
    Number of edges to retest   : 6557
    Number of intersected edges : 840
Refined mesh in = 0.02 s
After refinement feature refinement iteration 2 : cells:4813  faces:16102
points:6615
Cells per refinement level:
    0   2962
```

```
    1   217
    2   562
    3   1072
Balanced mesh in = 0.03 s
After balancing feature refinement iteration 2 : cells:4813  faces:16102
points:6615
Cells per refinement level:
    0   2962
    1   217
    2   562
    3   1072

Feature refinement iteration 3
------------------------------

Marked for refinement due to explicit features             : 313 cells.
Determined cells to refine in = 0.01 s
Selected for feature refinement : 410 cells (out of 4813)
Edge intersection testing:
    Number of edges             : 26311
    Number of edges to retest   : 15359
    Number of intersected edges : 3080
Refined mesh in = 0.02 s
After refinement feature refinement iteration 3 : cells:7683  faces:26311
points:11264
Cells per refinement level:
    0   2958
    1   228
    2   652
    3   1389
    4   2456
Balanced mesh in = 0.06 s
After balancing feature refinement iteration 3 : cells:7683  faces:26311
points:11264
Cells per refinement level:
    0   2958
    1   228
    2   652
    3   1389
    4   2456

Feature refinement iteration 4
------------------------------

Marked for refinement due to explicit features             : 720 cells.
Determined cells to refine in = 0.03 s
Selected for feature refinement : 1059 cells (out of 7683)
Edge intersection testing:
    Number of edges             : 52441
    Number of edges to retest   : 38436
    Number of intersected edges : 8149
Refined mesh in = 0.05 s
After refinement feature refinement iteration 4 : cells:15096  faces:52441
points:22948
Cells per refinement level:
    0   2958
    1   224
    2   644
```

```
    3   1392
    4   4294
    5   5584
Balanced mesh in = 0.11 s
After balancing feature refinement iteration 4 : cells:15096  faces:52441
points:22948
Cells per refinement level:
    0   2958
    1   224
    2   644
    3   1392
    4   4294
    5   5584

Feature refinement iteration 5
------------------------------

Marked for refinement due to explicit features             : 1894 cells.
Determined cells to refine in = 0.05 s
Selected for feature refinement : 3373 cells (out of 15096)
Edge intersection testing:
    Number of edges             : 135730
    Number of edges to retest   : 118914
    Number of intersected edges : 21638
Refined mesh in = 0.07 s
After refinement feature refinement iteration 5 : cells:38707  faces:135730
points:60063
Cells per refinement level:
    0   2956
    1   232
    2   613
    3   1860
    4   5485
    5   12913
    6   14648
Balanced mesh in = 0.16 s
After balancing feature refinement iteration 5 : cells:38707  faces:135730
points:60063
Cells per refinement level:
    0   2956
    1   232
    2   613
    3   1860
    4   5485
    5   12913
    6   14648

Feature refinement iteration 6
------------------------------

Marked for refinement due to explicit features             : 4010 cells.
Determined cells to refine in = 0.09 s
Selected for feature refinement : 7646 cells (out of 38707)
Edge intersection testing:
    Number of edges             : 325021
    Number of edges to retest   : 287963
    Number of intersected edges : 48140
Refined mesh in = 0.17 s
```

```
After refinement feature refinement iteration 6 : cells:92229  faces:325021
points:145545
Cells per refinement level:
    0   2956
    1   228
    2   618
    3   1969
    4   5619
    5   15755
    6   34268
    7   30816
Skipping balancing since max unbalance 0.0255676 is less than allowable 0.1

Feature refinement iteration 7
------------------------------

Marked for refinement due to explicit features             : 350 cells.
Determined cells to refine in = 0.31 s
Selected for feature refinement : 563 cells (out of 92229)
Edge intersection testing:
    Number of edges             : 338710
    Number of edges to retest   : 29164
    Number of intersected edges : 49989
Refined mesh in = 0.16 s
After refinement feature refinement iteration 7 : cells:96170  faces:338710
points:151472
Cells per refinement level:
    0   2956
    1   228
    2   618
    3   1962
    4   5642
    5   15837
    6   35383
    7   33544
Skipping balancing since max unbalance 0.040866 is less than allowable 0.1

Feature refinement iteration 8
------------------------------

Marked for refinement due to explicit features             : 29 cells.
Determined cells to refine in = 0.39 s
Selected for feature refinement : 46 cells (out of 96170)
Edge intersection testing:
    Number of edges             : 339781
    Number of edges to retest   : 3433
    Number of intersected edges : 50092
Refined mesh in = 0.11 s
After refinement feature refinement iteration 8 : cells:96492  faces:339781
points:151903
Cells per refinement level:
    0   2956
    1   228
    2   618
    3   1961
    4   5647
    5   15848
    6   35458
```

```
    7   33776
Skipping balancing since max unbalance 0.0469469 is less than allowable 0.1

Feature refinement iteration 9
------------------------------

Marked for refinement due to explicit features             : 10 cells.
Determined cells to refine in = 0.28 s
Selected for feature refinement : 10 cells (out of 96492)
Edge intersection testing:
    Number of edges             : 340012
    Number of edges to retest   : 776
    Number of intersected edges : 50111
Refined mesh in = 0.16 s
After refinement feature refinement iteration 9 : cells:96562  faces:340012
points:151993
Cells per refinement level:
    0   2956
    1   228
    2   618
    3   1961
    4   5647
    5   15848
    6   35448
    7   33856
Skipping balancing since max unbalance 0.0475362 is less than allowable 0.1

Feature refinement iteration 10
------------------------------

Marked for refinement due to explicit features             : 1 cells.
Determined cells to refine in = 0.26 s
Selected for feature refinement : 2 cells (out of 96562)
Edge intersection testing:
    Number of edges             : 340051
    Number of edges to retest   : 202
    Number of intersected edges : 50111
Refined mesh in = 0.16 s
After refinement feature refinement iteration 10 : cells:96576  faces:340051
points:152004
Cells per refinement level:
    0   2956
    1   228
    2   618
    3   1961
    4   5647
    5   15847
    6   35455
    7   33864
Skipping balancing since max unbalance 0.047341 is less than allowable 0.1

Feature refinement iteration 11
------------------------------

Marked for refinement due to explicit features             : 0 cells.
Determined cells to refine in = 0.26 s
Selected for feature refinement : 0 cells (out of 96576)
Stopping refining since too few cells selected.
```

```
Surface refinement iteration 0
------------------------------

Marked for refinement due to surface intersection          : 8705 cells.
Marked for refinement due to curvature/regions             : 9898 cells.
Determined cells to refine in = 0.03 s
Selected for refinement : 19566 cells (out of 96576)
Edge intersection testing:
    Number of edges             : 781939
    Number of edges to retest   : 684053
    Number of intersected edges : 100600
Refined mesh in = 0.52 s
After refinement surface refinement iteration 0 : cells:233538  faces:781939
points:318200
Cells per refinement level:
    0   2956
    1   216
    2   576
    3   2508
    4   7734
    5   28207
    6   78293
    7   113048
Skipping balancing since max unbalance 0.0871978 is less than allowable 0.1

Surface refinement iteration 1
------------------------------

Marked for refinement due to surface intersection          : 11912 cells.
Marked for refinement due to curvature/regions             : 7147 cells.
Determined cells to refine in = 0.11 s
Selected for refinement : 19901 cells (out of 233538)
Edge intersection testing:
    Number of edges             : 1229947
    Number of edges to retest   : 701666
    Number of intersected edges : 150071
Refined mesh in = 0.69 s
After refinement surface refinement iteration 1 : cells:372845  faces:1229947
points:487397
Cells per refinement level:
    0   2956
    1   210
    2   552
    3   2326
    4   11595
    5   36116
    6   148866
    7   170224
Balanced mesh in = 1.16 s
After balancing surface refinement iteration 1 : cells:372845  faces:1229947
points:487397
Cells per refinement level:
    0   2956
    1   210
    2   552
    3   2326
```

```
    4   11595
    5   36116
    6   148866
    7   170224

Surface refinement iteration 2
------------------------------

Marked for refinement due to surface intersection          : 10304 cells.
Marked for refinement due to curvature/regions             : 8453 cells.
Determined cells to refine in = 0.11 s
Selected for refinement : 19764 cells (out of 372845)
Edge intersection testing:
    Number of edges             : 1682020
    Number of edges to retest   : 684262
    Number of intersected edges : 202433
Refined mesh in = 0.83 s
After refinement surface refinement iteration 2 : cells:511193  faces:1682020
points:663002
Cells per refinement level:
    0   2956
    1   208
    2   552
    3   2196
    4   10759
    5   51181
    6   205493
    7   237848
Balanced mesh in = 1.62 s
After balancing surface refinement iteration 2 : cells:511193  faces:1682020
points:663002
Cells per refinement level:
    0   2956
    1   208
    2   552
    3   2196
    4   10759
    5   51181
    6   205493
    7   237848

Surface refinement iteration 3
------------------------------

Marked for refinement due to surface intersection          : 10862 cells.
Marked for refinement due to curvature/regions             : 3358 cells.
Determined cells to refine in = 0.16 s
Selected for refinement : 15347 cells (out of 511193)
Edge intersection testing:
    Number of edges             : 2034925
    Number of edges to retest   : 522611
    Number of intersected edges : 234336
Refined mesh in = 0.9 s
After refinement surface refinement iteration 3 : cells:618622  faces:2034925
points:801673
Cells per refinement level:
    0   2956
    1   208
```

```
    2   536
    3   2176
    4   10913
    5   48626
    6   288495
    7   264712
Balanced mesh in = 1.85 s
After balancing surface refinement iteration 3 : cells:618622  faces:2034925
points:801673
Cells per refinement level:
    0   2956
    1   208
    2   536
    3   2176
    4   10913
    5   48626
    6   288495
    7   264712

Surface refinement iteration 4
------------------------------

Marked for refinement due to surface intersection          : 1485 cells.
Marked for refinement due to curvature/regions             : 4752 cells.
Determined cells to refine in = 0.17 s
Selected for refinement : 6798 cells (out of 618622)
Skipping balancing since max unbalance 0.0845802 is less than allowable 0.1
After balancing surface refinement iteration 4 : cells:618622  faces:2034925
points:801673
Cells per refinement level:
    0   2956
    1   208
    2   536
    3   2176
    4   10913
    5   48626
    6   288495
    7   264712
Edge intersection testing:
    Number of edges             : 2196631
    Number of edges to retest   : 261142
    Number of intersected edges : 251961
Refined mesh in = 0.95 s
After refinement surface refinement iteration 4 : cells:666208  faces:2196631
points:869297
Cells per refinement level:
    0   2956
    1   208
    2   534
    3   2172
    4   10905
    5   48114
    6   298591
    7   302728

Surface refinement iteration 5
------------------------------
```

```
Marked for refinement due to surface intersection          : 17 cells.
Marked for refinement due to curvature/regions             : 1107 cells.
Determined cells to refine in = 0.15 s
Selected for refinement : 1298 cells (out of 666208)
Skipping balancing since max unbalance 0.0928751 is less than allowable 0.1
After balancing surface refinement iteration 5 : cells:666208  faces:2196631
points:869297
Cells per refinement level:
    0   2956
    1   208
    2   534
    3   2172
    4   10905
    5   48114
    6   298591
    7   302728
Edge intersection testing:
    Number of edges             : 2226172
    Number of edges to retest   : 67037
    Number of intersected edges : 254047
Refined mesh in = 0.86 s
After refinement surface refinement iteration 5 : cells:675294  faces:2226172
points:880656
Cells per refinement level:
    0   2956
    1   208
    2   534
    3   2168
    4   10903
    5   48233
    6   298708
    7   311584

Surface refinement iteration 6
------------------------------

Marked for refinement due to surface intersection          : 0 cells.
Marked for refinement due to curvature/regions             : 40 cells.
Determined cells to refine in = 0.17 s
Selected for refinement : 46 cells (out of 675294)
Skipping balancing since max unbalance 0.0932867 is less than allowable 0.1
After balancing surface refinement iteration 6 : cells:675294  faces:2226172
points:880656
Cells per refinement level:
    0   2956
    1   208
    2   534
    3   2168
    4   10903
    5   48233
    6   298708
    7   311584
Edge intersection testing:
    Number of edges             : 2227225
    Number of edges to retest   : 3544
    Number of intersected edges : 254086
Refined mesh in = 0.79 s
After refinement surface refinement iteration 6 : cells:675616  faces:2227225
```

```
points:881061
Cells per refinement level:
    0   2956
    1   208
    2   534
    3   2168
    4   10903
    5   48227
    6   298716
    7   311904

Surface refinement iteration 7
------------------------------

Marked for refinement due to surface intersection          : 0 cells.
Marked for refinement due to curvature/regions             : 4 cells.
Determined cells to refine in = 0.21 s
Selected for refinement : 4 cells (out of 675616)
Stopping refining since too few cells selected.


Removing mesh beyond surface intersections
------------------------------------------

Found point (3.0001 3.0001 0.43) in global region 0 out of 7 regions.
Keeping all cells in region 0 containing point (3.0001 3.0001 0.43)
Selected for keeping : 552599 cells.
Edge intersection testing:
    Number of edges             : 1896156
    Number of edges to retest   : 175441
    Number of intersected edges : 254086

Shell refinement iteration 0
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 1810 cells.
Determined cells to refine in = 3.23 s
Selected for internal refinement : 66806 cells (out of 552599)
Edge intersection testing:
    Number of edges             : 3338850
    Number of edges to retest   : 2713809
    Number of intersected edges : 281684
Refined mesh in = 1.71 s
After refinement shell refinement iteration 0 : cells:1020241  faces:3338850
points:1295961
Cells per refinement level:
    0   2872
    1   715
    2   1483
    3   3592
    4   15429
    5   37347
    6   302180
    7   656623
Skipping balancing since max unbalance 0.0698659 is less than allowable 0.1

Shell refinement iteration 1
```

```
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 3128 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 30704 cells (out of 1020241)
Skipping balancing since max unbalance 0.0522803 is less than allowable 0.1
After balancing shell refinement iteration 1 : cells:1020241  faces:3338850
points:1295961
Cells per refinement level:
    0   2872
    1   715
    2   1483
    3   3592
    4   15429
    5   37347
    6   302180
    7   656623
Edge intersection testing:
    Number of edges             : 4003569
    Number of edges to retest   : 1584346
    Number of intersected edges : 294707
Refined mesh in = 1.89 s
After refinement shell refinement iteration 1 : cells:1235169  faces:4003569
points:1530051
Cells per refinement level:
    0   2778
    1   1167
    2   3263
    3   5803
    4   35982
    5   44956
    6   311805
    7   829415

Shell refinement iteration 2
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 5280 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 11108 cells (out of 1235169)
Skipping balancing since max unbalance 0.0599433 is less than allowable 0.1
After balancing shell refinement iteration 2 : cells:1235169  faces:4003569
points:1530051
Cells per refinement level:
    0   2778
    1   1167
    2   3263
    3   5803
    4   35982
    5   44956
    6   311805
    7   829415
Edge intersection testing:
    Number of edges             : 4239351
    Number of edges to retest   : 499880
    Number of intersected edges : 295751
```

```
Refined mesh in = 1.67 s
After refinement shell refinement iteration 2 : cells:1312925  faces:4239351
points:1610305
Cells per refinement level:
    0   2696
    1   1544
    2   3676
    3   16622
    4   65421
    5   46303
    6   325512
    7   851151

Shell refinement iteration 3
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 12544 cells.
Determined cells to refine in = 0.35 s
Selected for internal refinement : 15236 cells (out of 1312925)
Balanced mesh in = 3.7 s
After balancing shell refinement iteration 3 : cells:1312925  faces:4239351
points:1610305
Cells per refinement level:
    0   2696
    1   1544
    2   3676
    3   16622
    4   65421
    5   46303
    6   325512
    7   851151
Edge intersection testing:
    Number of edges             : 4563378
    Number of edges to retest   : 457876
    Number of intersected edges : 296502
Refined mesh in = 1.9 s
After refinement shell refinement iteration 3 : cells:1419577  faces:4563378
points:1721054
Cells per refinement level:
    0   2683
    1   1366
    2   5070
    3   10954
    4   165748
    5   47687
    6   325046
    7   861023

Shell refinement iteration 4
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.35 s
Selected for internal refinement : 710 cells (out of 1419577)
Skipping balancing since max unbalance 0.00117722 is less than allowable 0.1
After balancing shell refinement iteration 4 : cells:1419577  faces:4563378
```

```
points:1721054
Cells per refinement level:
    0   2683
    1   1366
    2   5070
    3   10954
    4   165748
    5   47687
    6   325046
    7   861023
Edge intersection testing:
    Number of edges             : 4578363
    Number of edges to retest   : 46334
    Number of intersected edges : 296798
Refined mesh in = 1.85 s
After refinement shell refinement iteration 4 : cells:1424547  faces:4578363
points:1726074
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165746
    5   47595
    6   325373
    7   865319

Shell refinement iteration 5
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.4 s
Selected for internal refinement : 294 cells (out of 1424547)
Skipping balancing since max unbalance 0.00220594 is less than allowable 0.1
After balancing shell refinement iteration 5 : cells:1424547  faces:4578363
points:1726074
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165746
    5   47595
    6   325373
    7   865319
Edge intersection testing:
    Number of edges             : 4584537
    Number of edges to retest   : 18128
    Number of intersected edges : 297081
Refined mesh in = 1.56 s
After refinement shell refinement iteration 5 : cells:1426605  faces:4584537
points:1728129
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
```

```
    4   165745
    5   47598
    6   325125
    7   867623

Shell refinement iteration 6
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.38 s
Selected for internal refinement : 68 cells (out of 1426605)
Skipping balancing since max unbalance 0.00201881 is less than allowable 0.1
After balancing shell refinement iteration 6 : cells:1426605  faces:4584537
points:1728129
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47598
    6   325125
    7   867623
Edge intersection testing:
    Number of edges             : 4585995
    Number of edges to retest   : 4758
    Number of intersected edges : 297129
Refined mesh in = 1.56 s
After refinement shell refinement iteration 6 : cells:1427081  faces:4585995
points:1728635
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325147
    7   868087

Shell refinement iteration 7
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.34 s
Selected for internal refinement : 50 cells (out of 1427081)
Skipping balancing since max unbalance 0.00177312 is less than allowable 0.1
After balancing shell refinement iteration 7 : cells:1427081  faces:4585995
points:1728635
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
```

```
    6   325147
    7   868087
Edge intersection testing:
    Number of edges             : 4587075
    Number of edges to retest   : 3158
    Number of intersected edges : 297165
Refined mesh in = 1.66 s
After refinement shell refinement iteration 7 : cells:1427431  faces:4587075
points:1729013
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325097
    7   868487

Shell refinement iteration 8
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.31 s
Selected for internal refinement : 38 cells (out of 1427431)
Skipping balancing since max unbalance 0.00158647 is less than allowable 0.1
After balancing shell refinement iteration 8 : cells:1427431  faces:4587075
points:1729013
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325097
    7   868487
Edge intersection testing:
    Number of edges             : 4587897
    Number of edges to retest   : 2538
    Number of intersected edges : 297201
Refined mesh in = 1.49 s
After refinement shell refinement iteration 8 : cells:1427697  faces:4587897
points:1729303
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325059
    7   868791

Shell refinement iteration 9
----------------------------
```

```
Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.32 s
Selected for internal refinement : 34 cells (out of 1427697)
Skipping balancing since max unbalance 0.00170246 is less than allowable 0.1
After balancing shell refinement iteration 9 : cells:1427697  faces:4587897
points:1729303
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325059
    7   868791
Edge intersection testing:
    Number of edges             : 4588644
    Number of edges to retest   : 2040
    Number of intersected edges : 297237
Refined mesh in = 1.46 s
After refinement shell refinement iteration 9 : cells:1427935  faces:4588644
points:1729574
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325025
    7   869063

Shell refinement iteration 10
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 29 cells (out of 1427935)
Skipping balancing since max unbalance 0.00184436 is less than allowable 0.1
After balancing shell refinement iteration 10 : cells:1427935  faces:4588644
points:1729574
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   325025
    7   869063
Edge intersection testing:
    Number of edges             : 4589289
    Number of edges to retest   : 1894
    Number of intersected edges : 297273
Refined mesh in = 1.43 s
After refinement shell refinement iteration 10 : cells:1428138  faces:4589289
```

```
points:1729813
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324996
    7   869295

Shell refinement iteration 11
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.35 s
Selected for internal refinement : 32 cells (out of 1428138)
Skipping balancing since max unbalance 0.00200089 is less than allowable 0.1
After balancing shell refinement iteration 11 : cells:1428138  faces:4589289
points:1729813
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324996
    7   869295
Edge intersection testing:
    Number of edges             : 4590003
    Number of edges to retest   : 1924
    Number of intersected edges : 297309
Refined mesh in = 1.56 s
After refinement shell refinement iteration 11 : cells:1428362  faces:4590003
points:1730079
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324964
    7   869551

Shell refinement iteration 12
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 31 cells (out of 1428362)
Skipping balancing since max unbalance 0.00215249 is less than allowable 0.1
After balancing shell refinement iteration 12 : cells:1428362  faces:4590003
points:1730079
Cells per refinement level:
```

```
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324964
    7   869551
Edge intersection testing:
    Number of edges             : 4590699
    Number of edges to retest   : 1987
    Number of intersected edges : 297345
Refined mesh in = 1.45 s
After refinement shell refinement iteration 12 : cells:1428579  faces:4590699
points:1730341
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324933
    7   869799

Shell refinement iteration 13
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.31 s
Selected for internal refinement : 33 cells (out of 1428579)
Skipping balancing since max unbalance 0.00231381 is less than allowable 0.1
After balancing shell refinement iteration 13 : cells:1428579  faces:4590699
points:1730341
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324933
    7   869799
Edge intersection testing:
    Number of edges             : 4591422
    Number of edges to retest   : 2065
    Number of intersected edges : 297381
Refined mesh in = 1.55 s
After refinement shell refinement iteration 13 : cells:1428810  faces:4591422
points:1730602
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
```

```
    6   324900
    7   870063

Shell refinement iteration 14
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.31 s
Selected for internal refinement : 32 cells (out of 1428810)
Skipping balancing since max unbalance 0.0024702 is less than allowable 0.1
After balancing shell refinement iteration 14 : cells:1428810  faces:4591422
points:1730602
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324900
    7   870063
Edge intersection testing:
    Number of edges             : 4592130
    Number of edges to retest   : 1982
    Number of intersected edges : 297417
Refined mesh in = 1.47 s
After refinement shell refinement iteration 14 : cells:1429034  faces:4592130
points:1730862
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324868
    7   870319

Shell refinement iteration 15
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.35 s
Selected for internal refinement : 30 cells (out of 1429034)
Skipping balancing since max unbalance 0.00261677 is less than allowable 0.1
After balancing shell refinement iteration 15 : cells:1429034  faces:4592130
points:1730862
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324868
    7   870319
```

```
Edge intersection testing:
    Number of edges             : 4592799
    Number of edges to retest   : 1864
    Number of intersected edges : 297453
Refined mesh in = 1.48 s
After refinement shell refinement iteration 15 : cells:1429244  faces:4592799
points:1731111
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324838
    7   870559

Shell refinement iteration 16
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.34 s
Selected for internal refinement : 32 cells (out of 1429244)
Skipping balancing since max unbalance 0.00277306 is less than allowable 0.1
After balancing shell refinement iteration 16 : cells:1429244  faces:4592799
points:1731111
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324838
    7   870559
Edge intersection testing:
    Number of edges             : 4593510
    Number of edges to retest   : 2005
    Number of intersected edges : 297489
Refined mesh in = 1.6 s
After refinement shell refinement iteration 16 : cells:1429468  faces:4593510
points:1731374
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324806
    7   870815

Shell refinement iteration 17
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
```

```
Determined cells to refine in = 0.33 s
Selected for internal refinement : 31 cells (out of 1429468)
Skipping balancing since max unbalance 0.00292442 is less than allowable 0.1
After balancing shell refinement iteration 17 : cells:1429468  faces:4593510
points:1731374
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324806
    7   870815
Edge intersection testing:
    Number of edges             : 4594197
    Number of edges to retest   : 1891
    Number of intersected edges : 297525
Refined mesh in = 1.57 s
After refinement shell refinement iteration 17 : cells:1429685  faces:4594197
points:1731627
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324775
    7   871063

Shell refinement iteration 18
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.3 s
Selected for internal refinement : 30 cells (out of 1429685)
Skipping balancing since max unbalance 0.00307085 is less than allowable 0.1
After balancing shell refinement iteration 18 : cells:1429685  faces:4594197
points:1731627
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324775
    7   871063
Edge intersection testing:
    Number of edges             : 4594863
    Number of edges to retest   : 1950
    Number of intersected edges : 297561
Refined mesh in = 1.42 s
After refinement shell refinement iteration 18 : cells:1429895  faces:4594863
points:1731873
Cells per refinement level:
```

```
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324745
    7   871303

Shell refinement iteration 19
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.31 s
Selected for internal refinement : 32 cells (out of 1429895)
Skipping balancing since max unbalance 0.003227 is less than allowable 0.1
After balancing shell refinement iteration 19 : cells:1429895  faces:4594863
points:1731873
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324745
    7   871303
Edge intersection testing:
    Number of edges             : 4595577
    Number of edges to retest   : 1924
    Number of intersected edges : 297597
Refined mesh in = 1.52 s
After refinement shell refinement iteration 19 : cells:1430119  faces:4595577
points:1732139
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324713
    7   871559

Shell refinement iteration 20
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.31 s
Selected for internal refinement : 30 cells (out of 1430119)
Skipping balancing since max unbalance 0.00337335 is less than allowable 0.1
After balancing shell refinement iteration 20 : cells:1430119  faces:4595577
points:1732139
Cells per refinement level:
    0   2630
    1   1788
```

```
    2   5078
    3   11018
    4   165745
    5   47588
    6   324713
    7   871559
Edge intersection testing:
    Number of edges             : 4596255
    Number of edges to retest   : 1958
    Number of intersected edges : 297633
Refined mesh in = 1.55 s
After refinement shell refinement iteration 20 : cells:1430329  faces:4596255
points:1732397
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324683
    7   871799

Shell refinement iteration 21
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.36 s
Selected for internal refinement : 32 cells (out of 1430329)
Skipping balancing since max unbalance 0.00367201 is less than allowable 0.1
After balancing shell refinement iteration 21 : cells:1430329  faces:4596255
points:1732397
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324683
    7   871799
Edge intersection testing:
    Number of edges             : 4596957
    Number of edges to retest   : 2052
    Number of intersected edges : 297669
Refined mesh in = 1.5 s
After refinement shell refinement iteration 21 : cells:1430553  faces:4596957
points:1732651
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324651
    7   872055
```

```
Shell refinement iteration 22
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 32 cells (out of 1430553)
Skipping balancing since max unbalance 0.00398455 is less than allowable 0.1
After balancing shell refinement iteration 22 : cells:1430553  faces:4596957
points:1732651
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324651
    7   872055
Edge intersection testing:
    Number of edges             : 4597665
    Number of edges to retest   : 1994
    Number of intersected edges : 297705
Refined mesh in = 1.47 s
After refinement shell refinement iteration 22 : cells:1430777  faces:4597665
points:1732911
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324619
    7   872311

Shell refinement iteration 23
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 32 cells (out of 1430777)
Skipping balancing since max unbalance 0.00429699 is less than allowable 0.1
After balancing shell refinement iteration 23 : cells:1430777  faces:4597665
points:1732911
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324619
    7   872311
Edge intersection testing:
    Number of edges             : 4598373
```

```
    Number of edges to retest   : 1982
    Number of intersected edges : 297741
Refined mesh in = 1.44 s
After refinement shell refinement iteration 23 : cells:1431001  faces:4598373
points:1733171
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324587
    7   872567

Shell refinement iteration 24
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.31 s
Selected for internal refinement : 34 cells (out of 1431001)
Skipping balancing since max unbalance 0.00462886 is less than allowable 0.1
After balancing shell refinement iteration 24 : cells:1431001  faces:4598373
points:1733171
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324587
    7   872567
Edge intersection testing:
    Number of edges             : 4599123
    Number of edges to retest   : 2086
    Number of intersected edges : 297777
Refined mesh in = 1.45 s
After refinement shell refinement iteration 24 : cells:1431239  faces:4599123
points:1733445
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324553
    7   872839

Shell refinement iteration 25
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.35 s
Selected for internal refinement : 30 cells (out of 1431239)
```

```
Skipping balancing since max unbalance 0.00492159 is less than allowable 0.1
After balancing shell refinement iteration 25 : cells:1431239  faces:4599123
points:1733445
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324553
    7   872839
Edge intersection testing:
    Number of edges             : 4599789
    Number of edges to retest   : 1854
    Number of intersected edges : 297813
Refined mesh in = 1.43 s
After refinement shell refinement iteration 25 : cells:1431449  faces:4599789
points:1733691
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324523
    7   873079

Shell refinement iteration 26
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.39 s
Selected for internal refinement : 30 cells (out of 1431449)
Skipping balancing since max unbalance 0.00521423 is less than allowable 0.1
After balancing shell refinement iteration 26 : cells:1431449  faces:4599789
points:1733691
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324523
    7   873079
Edge intersection testing:
    Number of edges             : 4600455
    Number of edges to retest   : 1950
    Number of intersected edges : 297849
Refined mesh in = 1.47 s
After refinement shell refinement iteration 26 : cells:1431659  faces:4600455
points:1733937
Cells per refinement level:
    0   2630
    1   1788
```

```
    2   5078
    3   11018
    4   165745
    5   47588
    6   324493
    7   873319

Shell refinement iteration 27
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 32 cells (out of 1431659)
Skipping balancing since max unbalance 0.00552629 is less than allowable 0.1
After balancing shell refinement iteration 27 : cells:1431659  faces:4600455
points:1733937
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324493
    7   873319
Edge intersection testing:
    Number of edges             : 4601169
    Number of edges to retest   : 1924
    Number of intersected edges : 297885
Refined mesh in = 1.48 s
After refinement shell refinement iteration 27 : cells:1431883  faces:4601169
points:1734203
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324461
    7   873575

Shell refinement iteration 28
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.33 s
Selected for internal refinement : 31 cells (out of 1431883)
Skipping balancing since max unbalance 0.00584317 is less than allowable 0.1
After balancing shell refinement iteration 28 : cells:1431883  faces:4601169
points:1734203
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
```

```
    4   165745
    5   47588
    6   324461
    7   873575
Edge intersection testing:
    Number of edges             : 4601865
    Number of edges to retest   : 1977
    Number of intersected edges : 297921
Refined mesh in = 1.55 s
After refinement shell refinement iteration 28 : cells:1432100  faces:4601865
points:1734465
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324430
    7   873823

Shell refinement iteration 29
-----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.39 s
Selected for internal refinement : 31 cells (out of 1432100)
Skipping balancing since max unbalance 0.00613063 is less than allowable 0.1
After balancing shell refinement iteration 29 : cells:1432100  faces:4601865
points:1734465
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324430
    7   873823
Edge intersection testing:
    Number of edges             : 4602519
    Number of edges to retest   : 1817
    Number of intersected edges : 297939
Refined mesh in = 1.73 s
After refinement shell refinement iteration 29 : cells:1432317  faces:4602519
points:1734678
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324399
    7   874071

Shell refinement iteration 30
```

```
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.35 s
Selected for internal refinement : 12 cells (out of 1432317)
Skipping balancing since max unbalance 0.00624755 is less than allowable 0.1
After balancing shell refinement iteration 30 : cells:1432317  faces:4602519
points:1734678
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324399
    7   874071
Edge intersection testing:
    Number of edges             : 4602747
    Number of edges to retest   : 983
    Number of intersected edges : 297939
Refined mesh in = 1.58 s
After refinement shell refinement iteration 30 : cells:1432401  faces:4602747
points:1734739
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165745
    5   47588
    6   324387
    7   874167

Shell refinement iteration 31
----------------------------

Marked for refinement due to distance to explicit features : 0 cells.
Marked for refinement due to refinement shells             : 0 cells.
Determined cells to refine in = 0.32 s
Selected for internal refinement : 0 cells (out of 1432401)
Stopping refining since too few cells selected.


Dangling coarse cells refinement iteration 0
-------------------------------------------

Determined cells to refine in = 0.02 s
Selected for refinement : 119 cells (out of 1432401)
Skipping balancing since max unbalance 0.0061902 is less than allowable 0.1
After balancing coarse cell refinement iteration 0 : cells:1432401
faces:4602747  points:1734739
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
```

```
    4   165745
    5   47588
    6   324387
    7   874167
Edge intersection testing:
    Number of edges             : 4604532
    Number of edges to retest   : 14234
    Number of intersected edges : 297939
Refined mesh in = 1.67 s
After refinement coarse cell refinement iteration 0 : cells:1433234
faces:4604532  points:1734977
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47632
    6   324456
    7   874895

Dangling coarse cells refinement iteration 1
--------------------------------------------

Determined cells to refine in = 0.11 s
Selected for refinement : 2 cells (out of 1433234)
Stopping refining since too few cells selected.


Dangling coarse cells refinement iteration 0
--------------------------------------------

Determined cells to refine in = 0 s
Selected for refinement : 4 cells (out of 1433234)
Skipping balancing since max unbalance 0.00617054 is less than allowable 0.1
After balancing coarse cell refinement iteration 0 : cells:1433234
faces:4604532  points:1734977
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47632
    6   324456
    7   874895
Edge intersection testing:
    Number of edges             : 4604580
    Number of edges to retest   : 528
    Number of intersected edges : 297939
Refined mesh in = 1.47 s
After refinement coarse cell refinement iteration 0 : cells:1433262
faces:4604580  points:1734981
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
```

```
    4   165737
    5   47630
    6   324470
    7   874911

Dangling coarse cells refinement iteration 1
--------------------------------------------

Determined cells to refine in = 0.08 s
Selected for refinement : 0 cells (out of 1433262)
Stopping refining since too few cells selected.


Splitting mesh at surface intersections
---------------------------------------

Introducing baffles for 297939 faces that are intersected by the surface.

Edge intersection testing:
    Number of edges             : 4901691
    Number of edges to retest   : 1928692
    Number of intersected edges : 590005
Created baffles in = 1.78 s


After introducing baffles : cells:1433262  faces:4901691  points:1734981
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   324470
    7   874911

Introducing baffles to block off problem cells
----------------------------------------------

markFacesOnProblemCells : marked 354166 additional internal faces to be
converted into baffles.
Analyzed problem cells in = 0.87 s


Introducing baffles to delete problem cells.

Edge intersection testing:
    Number of edges             : 5255857
    Number of edges to retest   : 1269718
    Number of intersected edges : 590184
Created baffles in = 1.93 s


After introducing baffles : cells:1433262  faces:5255857  points:1736475
Cells per refinement level:
    0   2630
    1   1788
    2   5078
```

```
    3   11018
    4   165737
    5   47630
    6   324470
    7   874911

Remove unreachable sections of mesh
-----------------------------------

Keeping all cells in region 0 containing point (3.0001 3.0001 0.43)
Selected for keeping : 1058735 cells.
Edge intersection testing:
    Number of edges             : 3479512
    Number of edges to retest   : 0
    Number of intersected edges : 282576
Split mesh in = 6.29 s


After subsetting : cells:1058735  faces:3479512  points:1359114
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556886

Handling cells with snap problems
---------------------------------

Introducing baffles for 282576 faces that are intersected by the surface.

Edge intersection testing:
    Number of edges             : 3479512
    Number of edges to retest   : 946586
    Number of intersected edges : 282576
Created baffles in = 1.17 s


After introducing baffles : cells:1058735  faces:3479512  points:1359114
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556886

Introducing baffles to block off problem cells
----------------------------------------------

markFacesOnProblemCells : marked 150 additional internal faces to be converted
into baffles.
Analyzed problem cells in = 0.66 s
```

```
Introducing baffles to delete problem cells.

Edge intersection testing:
    Number of edges             : 3479662
    Number of edges to retest   : 766
    Number of intersected edges : 282576
Created baffles in = 0.96 s


After introducing baffles : cells:1058735  faces:3479662  points:1359114
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556886

Remove unreachable sections of mesh
-----------------------------------

Keeping all cells in region 0 containing point (3.0001 3.0001 0.43)
Selected for keeping : 1058671 cells.
Edge intersection testing:
    Number of edges             : 3479278
    Number of edges to retest   : 0
    Number of intersected edges : 282480
Split mesh in = 4.62 s


After subsetting : cells:1058671  faces:3479278  points:1359014
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556822

Merge free-standing baffles
---------------------------

freeStandingBaffles : detected 994 free-standing baffles out of 5608

freeStandingBaffles : detected 4 planar (within 30 degrees) free-standing
baffles out of 994

Detected free-standing baffles : 4
Edge intersection testing:
    Number of edges             : 3479274
    Number of edges to retest   : 4
    Number of intersected edges : 282476
```

```
Introducing baffles to block off problem cells
----------------------------------------------

markFacesOnProblemCells : marked 150 additional internal faces to be converted
into baffles.
Analyzed problem cells in = 1.81 s


Introducing baffles to delete problem cells.

Edge intersection testing:
    Number of edges             : 3479424
    Number of edges to retest   : 766
    Number of intersected edges : 282476
Created baffles in = 0.94 s


After introducing baffles : cells:1058671  faces:3479424  points:1359014
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556822
Merged free-standing baffles in = 0.05 s


dupNonManifoldPoints : Found : 6912 non-manifold points (out of 1378527)
Edge intersection testing:
    Number of edges             : 3479424
    Number of edges to retest   : 0
    Number of intersected edges : 282476
Detected unsplittable baffles : 0

Merge refined boundary faces
----------------------------

Merging 962 sets of faces.

Edge intersection testing:
    Number of edges             : 3478114
    Number of edges to retest   : 7338
    Number of intersected edges : 281178

Undo iteration 0
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                       : 0
    faces with face pyramid volume < 1e-13                : 0
    faces with face-decomposition tet quality < 1e-15     : 0
    faces with concavity > 80  degrees                    : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02       : 0
    faces with volume ratio of neighbour cells < 0.01     : 0
```

```
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0

Merging all points on surface that
- are used by only two boundary faces and
- make an angle with a cosine of more than 0.707107.

Removing 1125 straight edge points ...

Edge intersection testing:
    Number of edges             : 3478114
    Number of edges to retest   : 8827
    Number of intersected edges : 281178

Undo iteration 0
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 0
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0

Doing final balancing
---------------------

Found 0 zoned faces to keep together.
Found 0 separated coupled faces to keep together.
Refined mesh : cells:1058671  faces:3478114  points:1364822
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556822
Writing mesh to time constant
Wrote mesh in = 8.69 s.
Mesh refined in = 113.29 s.

Morphing phase
--------------


Snapping to features in 10 iterations ...
Constructing mesh displacer ...
Using mesh parameters
{
    maxNonOrtho     65;
    maxBoundarySkewness 20;
    maxInternalSkewness 4;
    maxConcave      80;
```

```
    minVol          1e-13;
    minTetQuality   1e-15;
    minArea         -1;
    minTwist        0.02;
    minDeterminant  0.001;
    minFaceWeight   0.02;
    minVolRatio     0.01;
    minTriangleTwist -1;
    nSmoothScale    4;
    errorReduction  0.75;
}


Checking initial mesh ...
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 0
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
Detected 0 illegal faces (concave, zero area or negative cell pyramid volume)
Checked initial mesh in = 1.24 s


Smoothing patch points ...
Smoothing iteration 0
Found 14016 non-manifold point(s).

Scaling iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 0
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
Successfully moved mesh

Smoothing iteration 1
Found 0 non-manifold point(s).

Scaling iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 2
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
```

```
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 2
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh

Smoothing iteration 2
Found 0 non-manifold point(s).

Scaling iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 3
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
```

```
    faces on cells with determinant < 0.001                : 0

Scaling iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 3
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 2
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 2
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 2
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
```

```
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 0
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
Successfully moved mesh

Smoothing iteration 3
Found 0 non-manifold point(s).

Scaling iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 192
    faces with face-decomposition tet quality < 1e-15       : 11
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 8
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 8
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
```

```
    faces with face-decomposition tet quality < 1e-15      : 7
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 4
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Scaling iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh

Smoothing iteration 4
Found 0 non-manifold point(s).

Scaling iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 384
    faces with face-decomposition tet quality < 1e-15      : 11
```

```
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 384
    faces with face-decomposition tet quality < 1e-15       : 11
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 384
    faces with face-decomposition tet quality < 1e-15       : 11
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 384
    faces with face-decomposition tet quality < 1e-15       : 11
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Scaling iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 192
    faces with face-decomposition tet quality < 1e-15       : 11
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
```

```
Scaling iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 192
    faces with face-decomposition tet quality < 1e-15        : 11
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Scaling iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Successfully moved mesh

Patch points smoothed in = 16.45 s



Morph iteration 0
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.00236837 min:4.18353e-09 max:0.0107131
Calculated surface displacement in = 0.1 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 5138 out of 292333 points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 868 baffle edges out of 578072 edges.
Initially selected 19540 points out of 292333 for reverse attraction.
Selected 50150 points out of 292333 for reverse attraction.
Stringing feature edges : changed 444 points
Stringing feature edges : changed 35 points
Stringing feature edges : changed 7 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear    : max:(0 -4.16334e-17 0.0107131) avg:(6.73222e-05 -7.08922e-07
0.000203746)
```

```
     feature  : max:(6.50947e-05 0.00818444 -0.00856318) avg:(1.28258e-06
-1.54149e-08 7.35837e-07)
Feature analysis : total master points:290436 attraction to :
    feature point   : 92
    feature edge    : 8078
    nearest surface : 0
    rest            : 282266

--> FOAM Warning : Displacement (-7.39308e-05 -4.02804e-06 -6.86376e-05) at mesh
point 10894 coord (0.157134 -0.602216 0.454103) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.51 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 64
    faces with face-decomposition tet quality < 1e-15       : 4
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 28
    faces with face-decomposition tet quality < 1e-15       : 4
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 4
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
```

```
Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 4
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 4
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 4
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Successfully moved mesh
Moved mesh in = 4.19 s
```

```
Morph iteration 1
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.00216424 min:5.74695e-09 max:0.00975301
Calculated surface displacement in = 0.13 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 5782 out of 292333 points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 1034 baffle edges out of 578072 edges.
Initially selected 19286 points out of 292333 for reverse attraction.
Selected 49952 points out of 292333 for reverse attraction.
Stringing feature edges : changed 501 points
Stringing feature edges : changed 50 points
Stringing feature edges : changed 9 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0 -4.16334e-17 0.00975301) avg:(6.13048e-05 -6.17344e-07
0.000183958)
     feature  : max:(0.00524903 -0.00946662 -0.00316241) avg:(1.90661e-06
-6.57086e-08 -5.39178e-07)
Feature analysis : total master points:290436 attraction to :
    feature point   : 92
    feature edge    : 8159
    nearest surface : 0
    rest            : 282185

--> FOAM Warning : Displacement (-0.000124993 -2.4356e-05 -5.75969e-05) at mesh
point 10894 coord (0.15706 -0.60222 0.454035) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.56 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 140
    faces with face-decomposition tet quality < 1e-15      : 81
    faces with concavity > 80  degrees                     : 2
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
```

```
Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 118
    faces with face-decomposition tet quality < 1e-15        : 81
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 2
    faces on cells with determinant < 0.001                  : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 104
    faces with face-decomposition tet quality < 1e-15        : 68
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 85
    faces with face-decomposition tet quality < 1e-15        : 32
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 62
    faces with face-decomposition tet quality < 1e-15        : 13
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 51
```

```
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh
Moved mesh in = 4.19 s



Morph iteration 2
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.00179276 min:3.24243e-09 max:0.00916539
Calculated surface displacement in = 0.11 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 7904 out of 292333 points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 1046 baffle edges out of 578072 edges.
Initially selected 19409 points out of 292333 for reverse attraction.
Selected 50075 points out of 292333 for reverse attraction.
Stringing feature edges : changed 456 points
Stringing feature edges : changed 39 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0.00220632 0 0.00889588) avg:(5.07042e-05 -4.66048e-07
0.000147929)
     feature  : max:(0.00524903 -0.00946662 -0.00316241) avg:(1.82669e-06
7.36293e-08 -6.63723e-07)
Feature analysis : total master points:290436 attraction to :
    feature point   : 92
    feature edge    : 8140
    nearest surface : 0
    rest            : 282204
```

```
--> FOAM Warning : Displacement (-0.000137347 -7.64442e-05 5.54788e-05) at mesh
point 10894 coord (0.156935 -0.602245 0.453977) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.58 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 193
    faces with face-decomposition tet quality < 1e-15       : 99
    faces with concavity > 80  degrees                      : 2
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 4
    faces on cells with determinant < 0.001                 : 28

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 173
    faces with face-decomposition tet quality < 1e-15       : 72
    faces with concavity > 80  degrees                      : 8
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 20

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 132
    faces with face-decomposition tet quality < 1e-15       : 101
    faces with concavity > 80  degrees                      : 2
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 117
    faces with face-decomposition tet quality < 1e-15       : 105
    faces with concavity > 80  degrees                      : 0
```

```
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 116
    faces with face-decomposition tet quality < 1e-15      : 87
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 108
    faces with face-decomposition tet quality < 1e-15      : 59
    faces with concavity > 80  degrees                     : 1
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh
Moved mesh in = 4.02 s



Morph iteration 3
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.00133703 min:4.18294e-09 max:0.0090305
Calculated surface displacement in = 0.13 s


Detecting near surfaces ...
```

```
Overriding nearest with intersection of close gaps at 15492 out of 292333
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 1295 baffle edges out of 578072 edges.
Initially selected 19544 points out of 292333 for reverse attraction.
Selected 50318 points out of 292333 for reverse attraction.
Stringing feature edges : changed 403 points
Stringing feature edges : changed 30 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0.00217385 0 0.00876494) avg:(3.70706e-05 -4.13789e-07
0.000104363)
     feature  : max:(0.000853807 -0.00017516 -0.0110996) avg:(1.66632e-06
4.98815e-08 -1.2696e-06)
Feature analysis : total master points:290436 attraction to :
    feature point   : 90
    feature edge    : 8236
    nearest surface : 0
    rest            : 282110

--> FOAM Warning : Displacement (-0.000658042 0.000551508 -0.000685986) at mesh
point 19094 coord (0.147242 -0.603447 0.45364) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.42 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 286
    faces with face-decomposition tet quality < 1e-15        : 62
    faces with concavity > 80  degrees                       : 5
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 2
    faces on cells with determinant < 0.001                  : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 255
    faces with face-decomposition tet quality < 1e-15        : 75
    faces with concavity > 80  degrees                       : 4
```

```
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 6

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 202
    faces with face-decomposition tet quality < 1e-15      : 98
    faces with concavity > 80  degrees                     : 2
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 32

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 178
    faces with face-decomposition tet quality < 1e-15      : 79
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 24

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 136
    faces with face-decomposition tet quality < 1e-15      : 99
    faces with concavity > 80  degrees                     : 2
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 113
    faces with face-decomposition tet quality < 1e-15      : 107
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 0
```

```
Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Successfully moved mesh
Moved mesh in = 4.36 s



Morph iteration 4
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.00089465 min:2.11858e-09 max:0.0088315
Calculated surface displacement in = 0.11 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 18874 out of 292333
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 1600 baffle edges out of 578072 edges.
Initially selected 19417 points out of 292333 for reverse attraction.
Selected 50040 points out of 292333 for reverse attraction.
Stringing feature edges : changed 421 points
Stringing feature edges : changed 22 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0.00212594 -1.11022e-15 0.0085718) avg:(2.28717e-05
-2.77669e-07 6.32068e-05)
     feature  : max:(0.00487789 -0.00946917 -0.00246586) avg:(1.26679e-06
9.15459e-08 -1.65684e-06)
Feature analysis : total master points:290436 attraction to :
    feature point   : 92
    feature edge    : 8271
    nearest surface : 0
    rest            : 282073

--> FOAM Warning : Displacement (-0.000540364 0.000723854 -0.000478556) at mesh
point 19094 coord (0.146584 -0.602895 0.452954) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
```

```
Iteration 10
Iteration 20
Displacement smoothed in = 2.71 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 274
    faces with face-decomposition tet quality < 1e-15        : 76
    faces with concavity > 80  degrees                       : 5
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 4
    faces on cells with determinant < 0.001                  : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 281
    faces with face-decomposition tet quality < 1e-15        : 72
    faces with concavity > 80  degrees                       : 3
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 2
    faces on cells with determinant < 0.001                  : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 281
    faces with face-decomposition tet quality < 1e-15        : 69
    faces with concavity > 80  degrees                       : 6
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 1
    faces on cells with determinant < 0.001                  : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 249
    faces with face-decomposition tet quality < 1e-15        : 67
    faces with concavity > 80  degrees                       : 2
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 3
    faces on cells with determinant < 0.001                  : 22
```

```
Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 207
    faces with face-decomposition tet quality < 1e-15        : 94
    faces with concavity > 80  degrees                       : 2
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 1
    faces on cells with determinant < 0.001                  : 38

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 170
    faces with face-decomposition tet quality < 1e-15        : 81
    faces with concavity > 80  degrees                       : 6
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 6
    faces on cells with determinant < 0.001                  : 12

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Successfully moved mesh
Moved mesh in = 4.29 s



Morph iteration 5
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.000535131 min:3.09994e-09 max:0.00855004
Calculated surface displacement in = 0.09 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 19369 out of 292333
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
```

```
   multi-patch features : false

Detected 1722 baffle edges out of 578072 edges.
Initially selected 19593 points out of 292333 for reverse attraction.
Selected 49695 points out of 292333 for reverse attraction.
Stringing feature edges : changed 441 points
Stringing feature edges : changed 36 points
Stringing feature edges : changed 11 points
Stringing feature edges : changed 7 points
Stringing feature edges : changed 6 points
Stringing feature edges : changed 3 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0.00205819 0 0.00829862) avg:(1.23054e-05 -1.80443e-07
3.21444e-05)
     feature  : max:(0.00487789 -0.00946917 -0.00246586) avg:(1.05449e-06
6.06426e-08 -1.40363e-06)
Feature analysis : total master points:290436 attraction to :
    feature point   : 98
    feature edge    : 8351
    nearest surface : 0
    rest            : 281987

--> FOAM Warning : Displacement (-0.000373752 0.000781762 -0.000249128) at mesh
point 19094 coord (0.146044 -0.602172 0.452476) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.53 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 257
    faces with face-decomposition tet quality < 1e-15        : 96
    faces with concavity > 80  degrees                       : 2
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 3
    faces on cells with determinant < 0.001                  : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 273
    faces with face-decomposition tet quality < 1e-15        : 75
    faces with concavity > 80  degrees                       : 3
```

```
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 6
    faces on cells with determinant < 0.001                : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 287
    faces with face-decomposition tet quality < 1e-15      : 69
    faces with concavity > 80  degrees                     : 3
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 289
    faces with face-decomposition tet quality < 1e-15      : 58
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 266
    faces with face-decomposition tet quality < 1e-15      : 65
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 14

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 212
    faces with face-decomposition tet quality < 1e-15      : 81
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 36
```

```
Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Successfully moved mesh
Moved mesh in = 4.1 s



Morph iteration 6
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.000291457 min:2.95548e-10 max:0.00816057
Calculated surface displacement in = 0.09 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 19671 out of 292333
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 2021 baffle edges out of 578072 edges.
Initially selected 19862 points out of 292333 for reverse attraction.
Selected 50327 points out of 292333 for reverse attraction.
Stringing feature edges : changed 468 points
Stringing feature edges : changed 34 points
Stringing feature edges : changed 11 points
Stringing feature edges : changed 5 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 3 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0.00196443 0 0.0079206) avg:(5.29644e-06 -1.19496e-07
1.40204e-05)
     feature  : max:(0.00487789 -0.00946917 -0.00246586) avg:(6.5497e-07
5.10536e-08 -2.47287e-06)
Feature analysis : total master points:290436 attraction to :
    feature point   : 96
    feature edge    : 8596
    nearest surface : 0
    rest            : 281744

--> FOAM Warning : Displacement (-0.000120779 0.000681002 -0.000157415) at mesh
```

```
point 19094 coord (0.14567 -0.60139 0.452226) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.61 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 243
    faces with face-decomposition tet quality < 1e-15        : 156
    faces with concavity > 80  degrees                       : 2
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 54
    faces on cells with determinant < 0.001                  : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 259
    faces with face-decomposition tet quality < 1e-15        : 129
    faces with concavity > 80  degrees                       : 1
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 21
    faces on cells with determinant < 0.001                  : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 275
    faces with face-decomposition tet quality < 1e-15        : 98
    faces with concavity > 80  degrees                       : 5
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 15
    faces on cells with determinant < 0.001                  : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 288
    faces with face-decomposition tet quality < 1e-15        : 81
    faces with concavity > 80  degrees                       : 3
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
```

```
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 15
    faces on cells with determinant < 0.001                : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 289
    faces with face-decomposition tet quality < 1e-15      : 63
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 21
    faces on cells with determinant < 0.001                : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 274
    faces with face-decomposition tet quality < 1e-15      : 62
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 16
    faces on cells with determinant < 0.001                : 10

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh
Moved mesh in = 4.33 s



Morph iteration 7
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:0.000153557 min:6.16267e-10 max:0.00764032
Calculated surface displacement in = 0.1 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 19694 out of 292333
```

```
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 2184 baffle edges out of 578072 edges.
Initially selected 19941 points out of 292333 for reverse attraction.
Selected 50402 points out of 292333 for reverse attraction.
Stringing feature edges : changed 433 points
Stringing feature edges : changed 38 points
Stringing feature edges : changed 13 points
Stringing feature edges : changed 11 points
Stringing feature edges : changed 5 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 6 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 5 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 3 points
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Stringing feature edges : changed 2 points
Stringing feature edges : changed 1 points
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Stringing feature edges : changed 1 points
Stringing feature edges : changed 3 points
```

```
Stringing feature edges : changed 1 points
Stringing feature edges : changed 3 points
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Stringing feature edges : changed 1 points
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Stringing feature edges : changed 2 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 1 points
```

```
Stringing feature edges : changed 3 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 3 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 0 points
Attraction:
     linear    : max:(0.0018392 0 0.00741565) avg:(2.23207e-06 -6.92069e-08
5.55273e-06)
     feature   : max:(0.00487789 -0.00946917 -0.00246586) avg:(3.68359e-07
-1.97862e-07 -1.90713e-06)
Feature analysis : total master points:290436 attraction to :
    feature point   : 94
    feature edge    : 8848
    nearest surface : 0
    rest            : 281494

--> FOAM Warning : Displacement (-4.141e-05 0.000453631 -5.39708e-05) at mesh
point 19094 coord (0.145549 -0.600709 0.452069) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.59 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 248
    faces with face-decomposition tet quality < 1e-15        : 298
    faces with concavity > 80  degrees                       : 4
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 67
    faces on cells with determinant < 0.001                  : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 248
    faces with face-decomposition tet quality < 1e-15        : 250
    faces with concavity > 80  degrees                       : 4
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
```

```
    faces with face twist < 0.02                              : 77
    faces on cells with determinant < 0.001                   : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 261
    faces with face-decomposition tet quality < 1e-15         : 212
    faces with concavity > 80  degrees                        : 1
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 71
    faces on cells with determinant < 0.001                   : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 278
    faces with face-decomposition tet quality < 1e-15         : 154
    faces with concavity > 80  degrees                        : 3
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 73
    faces on cells with determinant < 0.001                   : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 290
    faces with face-decomposition tet quality < 1e-15         : 126
    faces with concavity > 80  degrees                        : 4
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 72
    faces on cells with determinant < 0.001                   : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 289
    faces with face-decomposition tet quality < 1e-15         : 96
    faces with concavity > 80  degrees                        : 4
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 82
    faces on cells with determinant < 0.001                   : 0

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
```

```
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh
Moved mesh in = 4.56 s



Morph iteration 8
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:8.10595e-05 min:4.92606e-12 max:0.00738168
Calculated surface displacement in = 0.1 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 19857 out of 292333
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 2253 baffle edges out of 578072 edges.
Initially selected 20149 points out of 292333 for reverse attraction.
Selected 50924 points out of 292333 for reverse attraction.
Stringing feature edges : changed 312 points
Stringing feature edges : changed 26 points
Stringing feature edges : changed 9 points
Stringing feature edges : changed 5 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 3 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 2 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(-0.00285924 -1.19297e-06 0.00680544) avg:(1.29209e-06
6.96847e-08 3.25373e-06)
     feature  : max:(0.00487789 -0.00946917 -0.00246586) avg:(2.72079e-07
1.36239e-08 -1.05711e-06)
Feature analysis : total master points:290436 attraction to :
    feature point   : 94
    feature edge    : 8678
    nearest surface : 0
    rest            : 281664

--> FOAM Warning : Displacement (-9.31724e-06 0.000206685 -1.21434e-05) at mesh
point 19094 coord (0.145508 -0.600255 0.452015) points through the surrounding
patch faces
Smoothing displacement ...
```

```
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.42 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 279
    faces with face-decomposition tet quality < 1e-15        : 368
    faces with concavity > 80  degrees                       : 6
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 62
    faces on cells with determinant < 0.001                  : 0

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 259
    faces with face-decomposition tet quality < 1e-15        : 345
    faces with concavity > 80  degrees                       : 8
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 57
    faces on cells with determinant < 0.001                  : 0

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 260
    faces with face-decomposition tet quality < 1e-15        : 287
    faces with concavity > 80  degrees                       : 5
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 93
    faces on cells with determinant < 0.001                  : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 263
    faces with face-decomposition tet quality < 1e-15        : 243
    faces with concavity > 80  degrees                       : 5
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 105
```

```
    faces on cells with determinant < 0.001                : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 2
    faces with face pyramid volume < 1e-13                 : 286
    faces with face-decomposition tet quality < 1e-15      : 177
    faces with concavity > 80  degrees                     : 5
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 123
    faces on cells with determinant < 0.001                : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 2
    faces with face pyramid volume < 1e-13                 : 284
    faces with face-decomposition tet quality < 1e-15      : 152
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 143
    faces on cells with determinant < 0.001                : 0

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 2
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 0

Iteration 7
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh
Moved mesh in = 5.18 s
```

```
Morph iteration 9
-----------------
Calculating patchDisplacement as distance to nearest surface point ...
Wanted displacement : average:4.37633e-05 min:3.65034e-11 max:0.0073061
Calculated surface displacement in = 0.08 s


Detecting near surfaces ...
Overriding nearest with intersection of close gaps at 19795 out of 292333
points.
Overriding displacement on features :
   implicit features    : false
   explicit features    : true
   multi-patch features : false

Detected 2321 baffle edges out of 578072 edges.
Initially selected 20203 points out of 292333 for reverse attraction.
Selected 50983 points out of 292333 for reverse attraction.
Stringing feature edges : changed 190 points
Stringing feature edges : changed 29 points
Stringing feature edges : changed 5 points
Stringing feature edges : changed 6 points
Stringing feature edges : changed 5 points
Stringing feature edges : changed 3 points
Stringing feature edges : changed 4 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 1 points
Stringing feature edges : changed 3 points
Stringing feature edges : changed 0 points
Attraction:
     linear   : max:(0.0032937 0 -0.00652156) avg:(1.42906e-06 -3.04349e-08
3.01287e-06)
     feature  : max:(0.00487789 -0.00946917 -0.00246586) avg:(-1.78285e-07
7.61279e-08 -2.63984e-07)
Feature analysis : total master points:290436 attraction to :
    feature point   : 96
    feature edge    : 8737
    nearest surface : 0
    rest            : 281603

--> FOAM Warning : Displacement (0.00202741 -5.37512e-07 0.00258636) at mesh
point 10894 coord (0.156591 -0.606329 0.458276) points through the surrounding
patch faces
Smoothing displacement ...
Iteration 0
Iteration 10
Iteration 20
Displacement smoothed in = 2.09 s


Moving mesh ...

Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 4
    faces with face pyramid volume < 1e-13                  : 329
```

```
    faces with face-decomposition tet quality < 1e-15      : 509
    faces with concavity > 80  degrees                     : 1
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 59
    faces on cells with determinant < 0.001                : 2

Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 4
    faces with face pyramid volume < 1e-13                 : 316
    faces with face-decomposition tet quality < 1e-15      : 327
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 100
    faces on cells with determinant < 0.001                : 6

Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 4
    faces with face pyramid volume < 1e-13                 : 267
    faces with face-decomposition tet quality < 1e-15      : 289
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 108
    faces on cells with determinant < 0.001                : 0

Iteration 3
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 4
    faces with face pyramid volume < 1e-13                 : 160
    faces with face-decomposition tet quality < 1e-15      : 254
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 116
    faces on cells with determinant < 0.001                : 0

Iteration 4
Moving mesh using displacement scaling : min:0.316406  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 4
    faces with face pyramid volume < 1e-13                 : 88
    faces with face-decomposition tet quality < 1e-15      : 225
    faces with concavity > 80  degrees                     : 2
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 132
```

```
    faces on cells with determinant < 0.001                : 0

Iteration 5
Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.237305  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 4
    faces with face pyramid volume < 1e-13                 : 58
    faces with face-decomposition tet quality < 1e-15      : 192
    faces with concavity > 80  degrees                     : 4
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 140
    faces on cells with determinant < 0.001                : 0

Iteration 6
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 0

Iteration 7
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
Successfully moved mesh
Moved mesh in = 5.44 s


Repatching faces according to nearest surface ...
Repatched 0 faces in = 0.25 s


Edge intersection testing:
    Number of edges             : 3478114
    Number of edges to retest   : 1169473
    Number of intersected edges : 283990
Merging 55333 sets of faces.

Edge intersection testing:
    Number of edges             : 3416839
    Number of edges to retest   : 224367
```

```
    Number of intersected edges : 222551

Undo iteration 0
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 19
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Masters that need to be restored:34
Edge intersection testing:
    Number of edges             : 3416899
    Number of edges to retest   : 254
    Number of intersected edges : 222613


Undo iteration 1
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Merging all points on surface that
- are used by only two boundary faces and
- make an angle with a cosine of more than 0.866025.

Removing 49238 straight edge points ...

Edge intersection testing:
    Number of edges             : 3416899
    Number of edges to retest   : 213951
    Number of intersected edges : 221942

Undo iteration 0
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 7
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 8
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Detected 0 error faces on boundaries that have been merged. These will be
```

```
restored to their original faces.

Detected 15 error faces in mesh. Restoring neighbours of faces in error.

Edge intersection testing:
    Number of edges             : 3416899
    Number of edges to retest   : 458
    Number of intersected edges : 221942
Snapped mesh : cells:1058671  faces:3416899  points:1309895
Cells per refinement level:
    0   2630
    1   1788
    2   5078
    3   11018
    4   165737
    5   47630
    6   267968
    7   556822
Writing mesh to time constant
Wrote mesh in = 8.14 s.
Mesh snapped in = 96.8 s.

Shrinking and layer addition phase
----------------------------------

Using mesh parameters
{
    maxNonOrtho     65;
    maxBoundarySkewness 20;
    maxInternalSkewness 4;
    maxConcave      80;
    minVol          1e-13;
    minTetQuality   1e-15;
    minArea         -1;
    minTwist        0.02;
    minDeterminant  0.001;
    minFaceWeight   0.02;
    minVolRatio     0.01;
    minTriangleTwist -1;
    nSmoothScale    4;
    errorReduction  0.75;
}



Merging all faces of a cell
---------------------------
    - which are on the same patch
    - which make an angle < 60 degrees
      (cos:0.5)
    - as long as the resulting face doesn't become concave by more than 90
degrees
      (0=straight, 180=fully concave)

Merging 2961 sets of faces.

Edge intersection testing:
    Number of edges             : 3413570
```

```
    Number of edges to retest   : 13925
    Number of intersected edges : 218061

Undo iteration 0
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 31
    faces with concavity > 80  degrees                       : 2
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Masters that need to be restored:46
Edge intersection testing:
    Number of edges             : 3413644
    Number of edges to retest   : 329
    Number of intersected edges : 218135


Undo iteration 1
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0

Merging all points on surface that
- are used by only two boundary faces and
- make an angle with a cosine of more than 0.5.

Removing 3373 straight edge points ...

Edge intersection testing:
    Number of edges             : 3413644
    Number of edges to retest   : 18587
    Number of intersected edges : 217760

Undo iteration 0
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 7
    faces with face pyramid volume < 1e-13                   : 26
    faces with face-decomposition tet quality < 1e-15        : 156
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
```

```
Detected 29 error faces on boundaries that have been merged. These will be
restored to their original faces.

Edge intersection testing:
    Number of edges             : 3413644
    Number of edges to retest   : 102
    Number of intersected edges : 217760

Undo iteration 1
----------------
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 156
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Detected 0 error faces on boundaries that have been merged. These will be
restored to their original faces.

Detected 156 error faces in mesh. Restoring neighbours of faces in error.

Edge intersection testing:
    Number of edges             : 3413644
    Number of edges to retest   : 5426
    Number of intersected edges : 217767

Checking mesh manifoldness ...
Outside of mesh is multiply connected across edges or points.
This is not a fatal error but might cause some unexpected behaviour.


Checking initial mesh ...
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
Detected 0 illegal faces (concave, zero area or negative cell pyramid volume)

Doing initial balancing
-----------------------

Found 0 zoned faces to keep together.
Found 0 separated coupled faces to keep together.

Adding in total 0 inter-processor patches to handle extrusion of non-manifold
processor boundaries.

Handling points with inconsistent layer specification ...
```

```
Handling non-manifold points ...

Checking patch manifoldness ...
Outside of local patch is multiply connected across edges or points at 0 points.
Set displacement to zero for all 0 non-manifold points

Handling feature edges ...

Handling cells with warped patch faces ...
Set displacement to zero on 105 warped faces since layer would be > 0.5 of the
size of the bounding box.

patch     faces    layers avg thickness[m]
                          near-wall overall
-----     -----    ------ --------- -------
lowerWall 25266    1      0.0114    0.0114
motorBike 221375   1      0.00277   0.00277

Selecting externalDisplacementMeshMover displacementMedialAxis
displacementMedialAxis : Calculating distance to Medial Axis ...
displacementMedialAxis : Smoothing normals ...
    Iteration 0   residual 0.035533
displacementMedialAxis : Inserting points on patch frontAndBack if angle to
nearest layer patch > 30 degrees.
displacementMedialAxis : Inserting points on patch inlet if angle to nearest
layer patch > 30 degrees.
displacementMedialAxis : Inserting points on patch outlet if angle to nearest
layer patch > 30 degrees.
displacementMedialAxis : Inserting points on patch upperWall if angle to nearest
layer patch > 30 degrees.
displacementMedialAxis : Smoothing normals in interior ...
    Iteration 0   residual 0.0864397

Layer addition iteration 0
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 346 points with point normal pointing through faces.
Reset displacement at 346 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2408 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 8939
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 2.78108e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 131
    faces with face pyramid volume < 1e-13                 : 26
    faces with face-decomposition tet quality < 1e-15      : 59
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
```

```
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 28
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 49
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 35
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 16
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 27
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 31
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 8
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 21
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 27
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 6 faces due to stringed edges with
inconsistent extrusion.
```

```
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                         : 110
    faces with face pyramid volume < 1e-13                  : 18
    faces with face-decomposition tet quality < 1e-15       : 1149
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 44
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 97
    faces on cells with determinant < 0.001                 : 8
Detected 1426 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 241060 out of 246641 faces (97.7372%). Removed extrusion at 1250
faces.
Added 242443 out of 246641 cells (98.2979%).


Layer addition iteration 1
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 8 points with point normal pointing through faces.
Reset displacement at 8 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2083 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 4761
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.63962e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 2
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 32
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 22
    faces with concavity > 80  degrees                      : 0
```

```
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 22
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 22
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 2 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 18 faces due to stringed edges with
inconsistent extrusion.
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                        : 47
```

```
    faces with face pyramid volume < 1e-13                : 14
    faces with face-decomposition tet quality < 1e-15     : 1091
    faces with concavity > 80  degrees                    : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02       : 0
    faces with volume ratio of neighbour cells < 0.01     : 0
    faces with face twist < 0.02                          : 84
    faces on cells with determinant < 0.001               : 0
Detected 1236 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 238257 out of 246641 faces (96.6007%). Removed extrusion at 985 faces.
Added 239350 out of 246641 cells (97.0439%).


Layer addition iteration 2
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2079 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 681
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.74223e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                       : 2
    faces with face pyramid volume < 1e-13                : 0
    faces with face-decomposition tet quality < 1e-15     : 16
    faces with concavity > 80  degrees                    : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02       : 0
    faces with volume ratio of neighbour cells < 0.01     : 0
    faces with face twist < 0.02                          : 0
    faces on cells with determinant < 0.001               : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                       : 0
    faces with face pyramid volume < 1e-13                : 0
    faces with face-decomposition tet quality < 1e-15     : 6
    faces with concavity > 80  degrees                    : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02       : 0
    faces with volume ratio of neighbour cells < 0.01     : 0
    faces with face twist < 0.02                          : 0
    faces on cells with determinant < 0.001               : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                       : 0
    faces with face pyramid volume < 1e-13                : 0
    faces with face-decomposition tet quality < 1e-15     : 6
```

```
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 6
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 0
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                         : 20
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 297
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 52
    faces on cells with determinant < 0.001                 : 0
Detected 369 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 237490 out of 246641 faces (96.2897%). Removed extrusion at 337 faces.
Added 237849 out of 246641 cells (96.4353%).


Layer addition iteration 3
--------------------------
```

```
Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 189
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.7654e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 16
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
```

```
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                        : 12
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 102
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 11
    faces on cells with determinant < 0.001                : 0
Detected 125 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 237252 out of 246641 faces (96.1933%). Removed extrusion at 119 faces.
Added 237373 out of 246641 cells (96.2423%).


Layer addition iteration 4
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 143
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.78475e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
```

```
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 16
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 0
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
```

```
    faces on cells with determinant < 0.001               : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                       : 2
    faces with face pyramid volume < 1e-13                : 0
    faces with face-decomposition tet quality < 1e-15     : 29
    faces with concavity > 80  degrees                    : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02       : 0
    faces with volume ratio of neighbour cells < 0.01     : 0
    faces with face twist < 0.02                          : 6
    faces on cells with determinant < 0.001               : 0
Detected 37 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 237159 out of 246641 faces (96.1555%). Removed extrusion at 35 faces.
Added 237194 out of 246641 cells (96.1697%).


Layer addition iteration 5
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 144
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.80346e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                       : 2
    faces with face pyramid volume < 1e-13                : 0
    faces with face-decomposition tet quality < 1e-15     : 16
    faces with concavity > 80  degrees                    : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02       : 0
    faces with volume ratio of neighbour cells < 0.01     : 0
    faces with face twist < 0.02                          : 0
    faces on cells with determinant < 0.001               : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                       : 0
    faces with face pyramid volume < 1e-13                : 0
```

```
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                        : 2
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 15
```

```
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 2
    faces on cells with determinant < 0.001                  : 0
Detected 19 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 237083 out of 246641 faces (96.1247%). Removed extrusion at 15 faces.
Added 237098 out of 246641 cells (96.1308%).


Layer addition iteration 6
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 72
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.81447e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 16
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
```

```
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 10
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 0
Detected 12 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 237049 out of 246641 faces (96.1109%). Removed extrusion at 10 faces.
Added 237059 out of 246641 cells (96.115%).


Layer addition iteration 7
--------------------------

Determining displacement for added points according to pointNormal ...
```

```
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 64
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.82383e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 16
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
```

```
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 0
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                           : 2
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 6
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 6
    faces on cells with determinant < 0.001                   : 0
Detected 14 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 237013 out of 246641 faces (96.0964%). Removed extrusion at 12 faces.
Added 237025 out of 246641 cells (96.1012%).


Layer addition iteration 8
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 150
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.843e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 2
```

```
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 16
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
```

```
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                         : 2
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 10
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
Detected 12 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 236943 out of 246641 faces (96.068%). Removed extrusion at 12 faces.
Added 236955 out of 246641 cells (96.0728%).


Layer addition iteration 9
--------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 134
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.8617e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 2
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 16
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 6
    faces with concavity > 80  degrees                      : 0
```

```
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 12
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
```

```
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 2
    faces on cells with determinant < 0.001                : 0
Detected 14 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 236879 out of 246641 faces (96.042%). Removed extrusion at 14 faces.
Added 236893 out of 246641 cells (96.0477%).


Layer addition iteration 10
---------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 102
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.87491e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 2
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 16
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
```

```
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 6
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 0
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 8
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
Detected 8 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 236835 out of 246641 faces (96.0242%). Removed extrusion at 8 faces.
Added 236843 out of 246641 cells (96.0274%).


Layer addition iteration 11
---------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.
```

```
displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 38
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.88138e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 2
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 16
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                          : 0
    faces with face pyramid volume < 1e-13                   : 0
    faces with face-decomposition tet quality < 1e-15        : 6
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary)   : 0
    faces with interpolation weights (0..1)  < 0.02          : 0
    faces with volume ratio of neighbour cells < 0.01        : 0
    faces with face twist < 0.02                             : 0
    faces on cells with determinant < 0.001                  : 0
```

```
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 0
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 4
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
Detected 4 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 236823 out of 246641 faces (96.0193%). Removed extrusion at 4 faces.
Added 236827 out of 246641 cells (96.0209%).


Layer addition iteration 12
---------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 40
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.88731e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 2
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 16
```

```
    faces with concavity > 80  degrees                       : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 6
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 6
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 6
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 0
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
```

```
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 2
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 2
    faces on cells with determinant < 0.001                 : 0
Detected 4 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 236811 out of 246641 faces (96.0145%). Removed extrusion at 4 faces.
Added 236815 out of 246641 cells (96.0161%).


Layer addition iteration 13
---------------------------

Determining displacement for added points according to pointNormal ...
Detected 0 points with point normal pointing through faces.
Reset displacement at 0 points to average of surrounding points.

displacementMedialAxis : Smoothing using Medial Axis ...
displacementMedialAxis : Reducing layer thickness at 2075 nodes where thickness
to medial axis distance is large
displacementMedialAxis : Removing isolated regions ...
displacementMedialAxis : Number of isolated points extrusion stopped : 34
displacementMedialAxis : Smoothing field ...
    Iteration 0   residual 3.89232e-05
displacementMedialAxis : Moving mesh ...
displacementMedialAxis : Iteration 0
Moving mesh using displacement scaling : min:1  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 2
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 16
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
    faces with volume ratio of neighbour cells < 0.01       : 0
    faces with face twist < 0.02                            : 0
    faces on cells with determinant < 0.001                 : 0
displacementMedialAxis : Iteration 1
Moving mesh using displacement scaling : min:0.75  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                         : 0
    faces with face pyramid volume < 1e-13                  : 0
    faces with face-decomposition tet quality < 1e-15       : 6
    faces with concavity > 80  degrees                      : 0
    faces with skewness > 4   (internal) or 20  (boundary)  : 0
    faces with interpolation weights (0..1)  < 0.02         : 0
```

```
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 2
Moving mesh using displacement scaling : min:0.5625  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 3
displacementMedialAxis : Displacement scaling for error reduction set to 0.
Moving mesh using displacement scaling : min:0.421875  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 6
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Iteration 4
Moving mesh using displacement scaling : min:0  max:1
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
    faces with face twist < 0.02                           : 0
    faces on cells with determinant < 0.001                : 0
displacementMedialAxis : Successfully moved mesh
displacementMedialAxis : Finished moving mesh ...
truncateDisplacement : Unextruded 0 faces due to non-consecutive vertices being
extruded.
truncateDisplacement : Unextruded 0 faces due to stringed edges with
inconsistent extrusion.

Setting up information for layer truncation ...

Checking mesh with layer ...
Checking faces in error :
    non-orthogonality > 65  degrees                        : 0
    faces with face pyramid volume < 1e-13                 : 0
    faces with face-decomposition tet quality < 1e-15      : 0
    faces with concavity > 80  degrees                     : 0
    faces with skewness > 4   (internal) or 20  (boundary) : 0
    faces with interpolation weights (0..1)  < 0.02        : 0
    faces with volume ratio of neighbour cells < 0.01      : 0
```

```
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
Detected 0 illegal faces (concave, zero area or negative cell pyramid volume)
Extruding 236799 out of 246641 faces (96.0096%). Removed extrusion at 0 faces.
Added 236799 out of 246641 cells (96.0096%).
Edge intersection testing:
    Number of edges             : 4123553
    Number of edges to retest   : 0
    Number of intersected edges : 428550

Doing final balancing
---------------------

Writing 236799 added cells to cellSet addedCells
Writing 0 faces inside added layer to faceSet layerFaces

Writing fields with layer information:
    nSurfaceLayers    : actual number of layers
    thickness         : overall layer thickness
    thicknessFraction : overall layer thickness (fraction of desired thickness)


patch     faces    layers   overall thickness
                             [m]       [%]
-----     -----    ------   ---       ---
lowerWall 25266    0.995    0.0102    94.8
motorBike 221375   0.956    0.00232   81.8

Layer mesh : cells:1295470  faces:4123553  points:1542765
Cells per refinement level:
    0   2848
    1   1940
    2   5368
    3   11460
    4   168854
    5   50188
    6   328949
    7   725863
Writing mesh to time constant
Wrote mesh in = 112.07 s.
Layers added in = 112.07 s.
Checking final mesh ...
Checking faces in error :
    non-orthogonality > 65  degrees                           : 0
    faces with face pyramid volume < 1e-13                    : 0
    faces with face-decomposition tet quality < 1e-15         : 0
    faces with concavity > 80  degrees                        : 0
    faces with skewness > 4   (internal) or 20  (boundary)    : 0
    faces with interpolation weights (0..1)  < 0.02           : 0
    faces with volume ratio of neighbour cells < 0.01         : 0
    faces with face twist < 0.02                              : 0
    faces on cells with determinant < 0.001                   : 0
Finished meshing without any errors
Finished meshing in = 325.66 s.
End

Finalising parallel run
```