```
VOLUME =  9.5502885e+05  MM^3
SURFACE AREA =  3.8191213e+05  MM^2
AVERAGE DENSITY =  2.8947088e-06 KILOGRAM / MM^3
MASS =  2.7645304e+00 KILOGRAM
CENTER OF GRAVITY with respect to DOOSAN_PT coordinate frame:
X   Y   Z    -2.4186667e-01  2.2585782e+01  1.4620895e+02  MM

INERTIA with respect to DOOSAN_PT coordinate frame:  (KILOGRAM * MM^2)

INERTIA TENSOR:
Ixx Ixy Ixz  9.1199907e+04  6.1258184e+01  1.3962470e+02
Iyx Iyy Iyz  6.1258184e+01  8.5539289e+04 -1.3384175e+04
Izx Izy Izz  1.3962470e+02 -1.3384175e+04  1.0664208e+04

INERTIA at CENTER OF GRAVITY with respect to DOOSAN_PT coordinate frame:
(KILOGRAM * MM^2)

INERTIA TENSOR:
Ixx Ixy Ixz  3.0692149e+04  4.6156251e+01  4.1862409e+01
Iyx Iyy Iyz  4.6156251e+01  2.6441604e+04 -4.2550226e+03
Izx Izy Izz  4.1862409e+01 -4.2550226e+03  9.2538107e+03

PRINCIPAL MOMENTS OF INERTIA:  (KILOGRAM * MM^2)
I1  I2  I3   8.2579981e+03  2.7436915e+04  3.0692651e+04

ROTATION MATRIX from DOOSAN_PT orientation to PRINCIPAL AXES:
      -0.00229       -0.01087       -0.99994
       0.22785        0.97363       -0.01111
       0.97369       -0.22786        0.00025

ROTATION ANGLES from DOOSAN_PT orientation to PRINCIPAL AXES (degrees):
angles about x  y  z  88.698        -89.363        101.870

RADII OF GYRATION with respect to PRINCIPAL AXES:
R1  R2  R3 5.4654598e+01  9.9622388e+01  1.0536746e+02  MM

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MASS PROPERTIES OF COMPONENTS OF THE ASSEMBLY
(in assembly units and the DOOSAN_PT coordinate frame)

   DENSITY             MASS          C.G.:  X        Y         Z

                        MG0008A0            MATERIAL:
  ERGAL70
         2.81000e-06  1.79405e-01 -1.10337e-02  3.72661e-02  6.13000e+01
       SINGLE_FOLDED_BEAM_DIRECT             MATERIAL:
  ERGAL70
         2.81000e-06  4.58649e-02 -2.56971e+01  2.56971e+01  9.71263e+01
       SINGLE_FOLDED_BEAM_DIRECT             MATERIAL:
  ERGAL70
         2.81000e-06  4.58649e-02 -2.56971e+01 -2.56971e+01  9.71263e+01
       SINGLE_FOLDED_BEAM_DIRECT             MATERIAL:
  ERGAL70
```

```
       2.81000e-06  4.58649e-02  2.56971e+01 -2.56971e+01  9.71263e+01
     SINGLE_FOLDED_BEAM_DIRECT            MATERIAL:
ERGAL70
       2.81000e-06  4.58649e-02  2.56971e+01  2.56971e+01  9.71263e+01
                     MG0010A0            MATERIAL:
ERGAL70
       2.81000e-06  3.84247e-02  1.01356e-05  3.51874e-02  1.32933e+02
        TOP_HALF_TOOL_ASSEMBLY            MATERIAL:
UNKNOWN
       2.81000e-06  1.64166e+00 -3.95901e-01  3.80075e+01  2.14513e+02
  FT_SENSOR_CONNECTOR_ASSEMBLY            MATERIAL:
UNKNOWN
       2.98939e-06  6.56649e-01 -2.54824e-02  5.42229e-02  1.86820e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -1.79266e+01  1.79266e+01  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -9.22914e+00  9.22914e+00  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -1.79266e+01 -1.79266e+01  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -9.22915e+00 -9.22915e+00  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  1.79266e+01 -1.79266e+01  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  9.22916e+00 -9.22916e+00  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  1.79266e+01  1.79266e+01  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  9.22915e+00  9.22915e+00  1.33438e+02
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -4.24264e+01  4.24264e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -3.37290e+01  3.37290e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -4.24264e+01 -4.24264e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03 -3.37290e+01 -3.37290e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  4.24264e+01 -4.24264e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
```

```
       7.78000e-06  1.92215e-03  3.37290e+01 -3.37290e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  4.24264e+01  4.24264e+01  6.02947e+01
         V4-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  1.92215e-03  3.37290e+01  3.37290e+01  6.02947e+01
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04 -3.80777e+01  3.80777e+01  6.48000e+01
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04 -3.80777e+01 -3.80777e+01  6.48000e+01
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04  3.80777e+01 -3.80777e+01  6.48000e+01
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04  3.80777e+01  3.80777e+01  6.48000e+01
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04 -1.35779e+01 -1.35779e+01  1.30933e+02
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04  1.35779e+01 -1.35779e+01  1.30933e+02
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04  1.35779e+01  1.35779e+01  1.30933e+02
              S4-10--_-_I2338_B           MATERIAL:
  STEEL
       7.82708e-06  9.73414e-04 -1.35779e+01  1.35779e+01  1.30933e+02
            V4-8_UNI5931-ISO4762           MATERIAL:
AISI304
       7.78000e-06  1.65598e-03 -1.90000e+01 -2.49359e-05  1.31061e+02
            V4-8_UNI5931-ISO4762           MATERIAL:
AISI304
       7.78000e-06  1.65598e-03  4.97334e-05 -1.90000e+01  1.31061e+02
            V4-8_UNI5931-ISO4762           MATERIAL:
AISI304
       7.78000e-06  1.65598e-03  1.90000e+01  6.21455e-06  1.31061e+02
            V4-8_UNI5931-ISO4762           MATERIAL:
AISI304
       7.78000e-06  1.65598e-03  1.85829e-05  1.90000e+01  1.31061e+02
         V5-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  3.29389e-03  1.85456e+01  6.02583e+00  6.27485e+01
         V5-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  3.29389e-03  1.85456e+01 -6.02583e+00  6.27485e+01
         V5-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  3.29389e-03 -4.05428e+00 -1.90739e+01  6.27485e+01
         V5-12_UNI5931-ISO4762            MATERIAL:
AISI304
```

```
       7.78000e-06  3.29389e-03 -1.44913e+01 -1.30480e+01  6.27485e+01
         V5-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  3.29389e-03 -1.44913e+01  1.30480e+01  6.27485e+01
         V5-12_UNI5931-ISO4762            MATERIAL:
AISI304
       7.78000e-06  3.29389e-03 -4.05428e+00  1.90739e+01  6.27485e+01
```