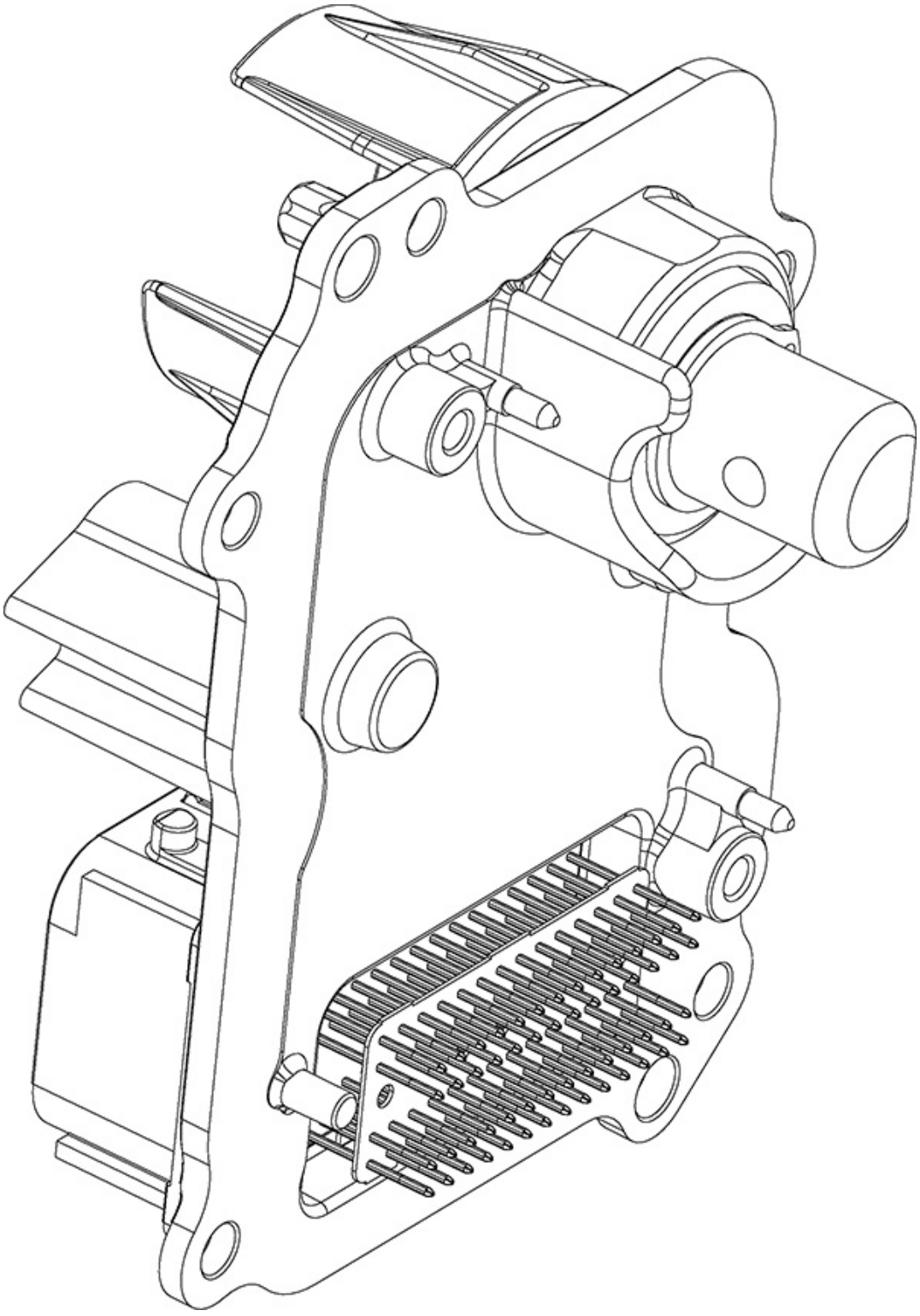
DAP-50000 [DRAWING NUMBER 24284638]



DRAWING NUMBER 24284638 Downlaod . . .

UNLESS OTHERWISE SPECIFIED :

LEAK RATE SPECIFICATION

INTERNAL TO EXTERNAL LEAKS APPLIES TO THE ENCLOSURE NON-PRESSURIZED/ VENTED AREAS THERE SHOULD BE NO LEAK PATH LARGER THAN THE EQUIVALENT HYDRAULIC DIAMETER OF A 10.5 MICRON SHARP EDGE ORIFICE CONFORMING TO ASME MFC-3M-2004 CERTIFIED TO 1.1 CUBIC CENTIMETERS PER MINUTE OF 20 C AIR AT 14 kPa GAUGE PRESSURE (5.0 STANDARD CUBIC CENTIMETERS PER MINUTE-SCCM)

PARTS MUST BE FREE FROM BURRS AND SHARP EDGES, WHICH MIGHT BE DETRIMENTAL TO SATISFACTORY ASSEMBLY, SAFE HANDLING OR FUNCTION OF PART

DEBRIS ON FINISHED PARTS SHALL BE REGULARLY MONITORED AND CONTROLLED USING STATISTICAL METHODS, UPPER CONTROL LIMITS AND PROCEDURES APPROVED BY GLOBAL PROPULSION SYSTEMS MATERIALS ENGINEERING AND DEFINED IN THE SUPPLIER PROCESS CONTROL PLAN PER GMW16037

PARTS AS DELIVERED TO ASSEMBLY SHALL BE CLEAN AND FREE OF DEBRIS, RESIDUAL ABRASIVE MATERIAL AND CORROSION PRODUCTS ADVERSELY AFFECTING FUNCTION OR APPEARANCE

WHERE DIMENSIONS ARE SPECIFIED ON THE DRAWING, THE DRAWING IS THE AUTHORITY FOR DIMENSIONAL VALUES.

WHERE DIMENSIONS ARE NOT SPECIFIED ON THE DRAWING, THE DIGITAL MODEL IS THE AUTHORITY FOR DIMENSIONAL VALUES.

DIMENSIONS OBTAINED FROM THE DIGITAL MODEL ARE BASIC:

1. FOR RELATIONSHIPS BETWEEN FEATURES WHEN ESTABLISHED BY GEOMETRIC

TOLERANCES.
2. FOR THE FORM OF A FEATURE WHEN CONTROLLED BY A PROFILE TOLERANCE.
3. FOR THE SIZE, FORM AND/OR RELATIONSHIP BETWEEN FIXED DATUM TARGETS.

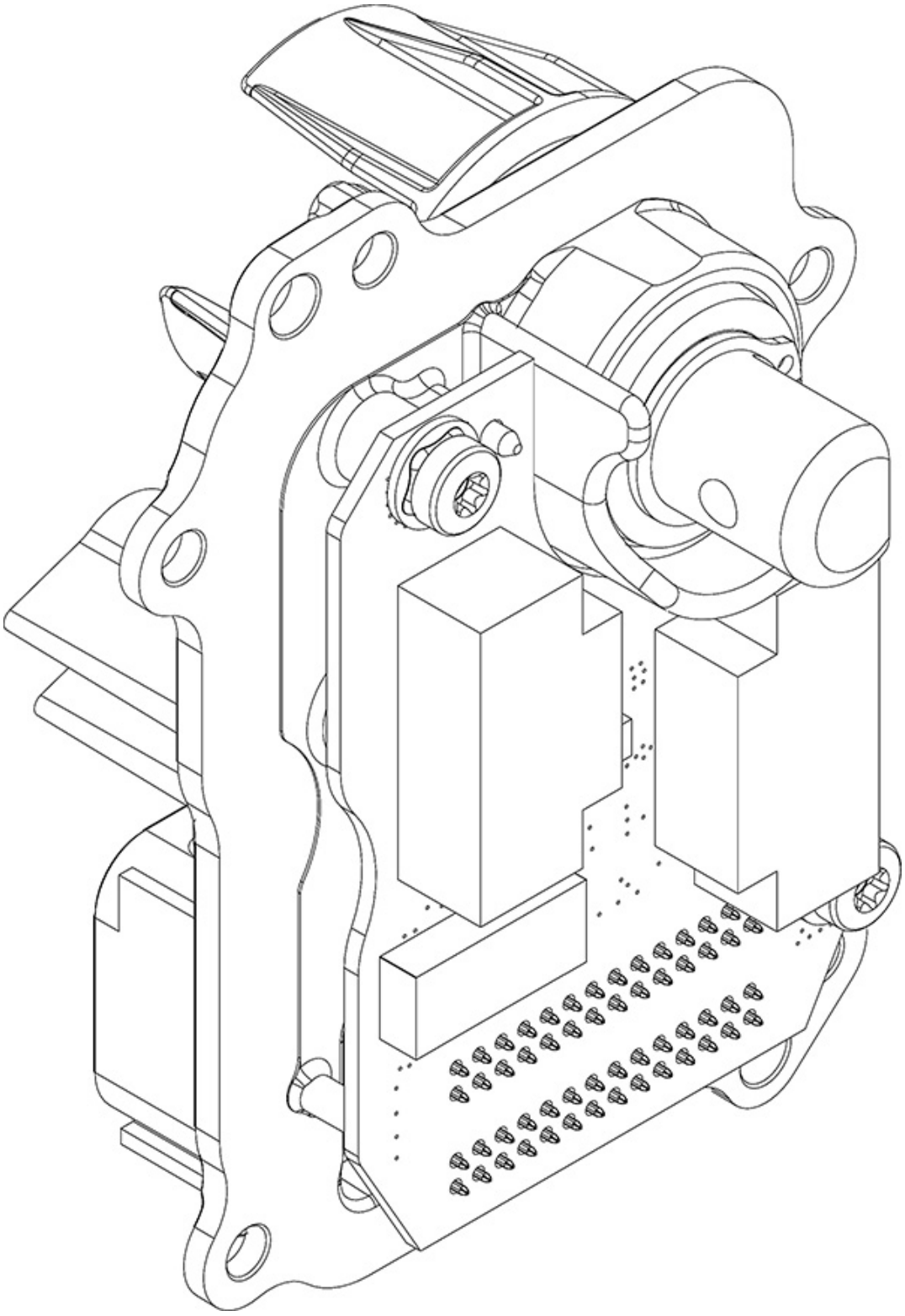
DIMENSIONS OBTAINED FROM THE DIGITAL MODEL ARE ROUNDED TO TWO DECIMAL PLACES (PER IEEE/ASTM SI 10-2002)

THE DIGITAL MODEL MUST CORRESPOND TO THE RELEASE LEVEL SHOWN IN THE PART BLOCK ON THIS DOCUMENT.

FOR SPECIFICATION AND INTERPRETATION OF KCDS BLOCK AND DRAWING SYMBOLS, SEE GM GLOBAL KCDS STANDARD GMW15049 AND GLOBAL PROPULSION SYSTEMS PROCEDURE ETQ-114.

More Detail . . .

DAP-50000 [DRAWING NUMBER 24284292]



DRAWING NUMBER 24284292 Download . . .

UNLESS OTHERWISE SPECIFIED :

SOLDERING PROCESS AND CONTROL. SOLDERING PROCESSES SHALL BE AUTOMATED AND THE SUPPLIER SHALL EXCEED ACCEPTABLE CRITERIA LISTED IN

IPC J-STD-001 FOR VERTICAL SOLDER FILL IN A THROUGH HOLE CONNECTION. GM REQUIRES A MINIMUM OF 95% VERTICAL FILL IN ALL THROUGH HOLE CONNECTIONS (E.G., HEADERS FOR CONNECTORS OR THROUGH HOLE COMPONENTS).

PHYSICS-OF-FAILURE ANALYSIS TO ESTIMATE THE LIFETIME OF THE PCB. THIS ANALYSIS SHALL INCLUDE AT A MINIMUM THE FOLLOWING INPUT PARAMETERS: CIRCUIT BOARD DESIGN FILES (E.G., GERBERS), PCB MATERIAL PROPERTIES, TG GLASS TEMPERATURE, SOLDER TYPE, AND COMPONENTS. THE SIMULATIONS SHALL INCLUDE AT A MINIMUM VIBRATION AND THERMAL CYCLING. THE RESULTS SHALL INCLUDE AT A MINIMUM VIA AND SOLDER JOINT LIFETIME. GM SUGGESTS DFR SHERLOCK FOR PHYSICS OF FAILURE MODELING.

PROCESS FOR INSTALLATION IN CONTROLLER ASSEMBLY LINE, INCLUDING MONITORING FOR TORQUE VALUE, REVOLUTION ANGLE, NUMBER OF FASTENERS, DRIVER POSITION, AND SCREWING SEQUENCE.

MECHANICAL ANALYSIS OF THE PRINTED CIRCUIT BOARD. THE SUPPLIER SHALL SUBMIT A TOLERANCE STACK UP ANALYSIS FOR THE MOUNTING ASSEMBLY AS WELL AS FOR EACH FASTENED JOINT. AN FEA/STRAIN ANALYSIS SHALL BE PERFORMED TO ANALYZE BOARD MOUNTING TECHNIQUES (PTH, SURFACE MOUNT [SMT] AND BOLTED JOINT).

THE SUPPLIER SHALL SUBMIT A VIBRATION ANALYSIS FOR MAXIMUM RESONANCE FREQUENCY INCLUDING MODAL ANALYSIS FOR POPULATED PCB BOARD.

SOLDER BALL FORMULATION DEFECT CONTROL PROCESS.

OPTICAL AND X-RAY INSPECTION

PARTS MUST BE FREE FROM BURRS AND SHARP EDGES, WHICH MIGHT BE DETRIMENTAL TO SATISFACTORY ASSEMBLY, SAFE HANDLING OR FUNCTION OF PART

PARTS AS DELIVERED TO ASSEMBLY SHALL BE CLEAN AND FREE OF DEBRIS, RESIDUAL ABRASIVE MATERIAL AND CORROSION PRODUCTS ADVERSELY AFFECTING FUNCTION OR APPEARANCE

DEBRIS ON FINISHED PARTS SHALL BE REGULARLY MONITORED AND CONTROLLED USING STATISTICAL METHODS, UPPER CONTROL LIMITS AND PROCEDURES APPROVED BY GLOBAL PROPULSION SYSTEMS MATERIALS ENGINEERING AND DEFINED IN THE SUPPLIER PROCESS CONTROL PLAN PER GMW16037

More Detail . . .