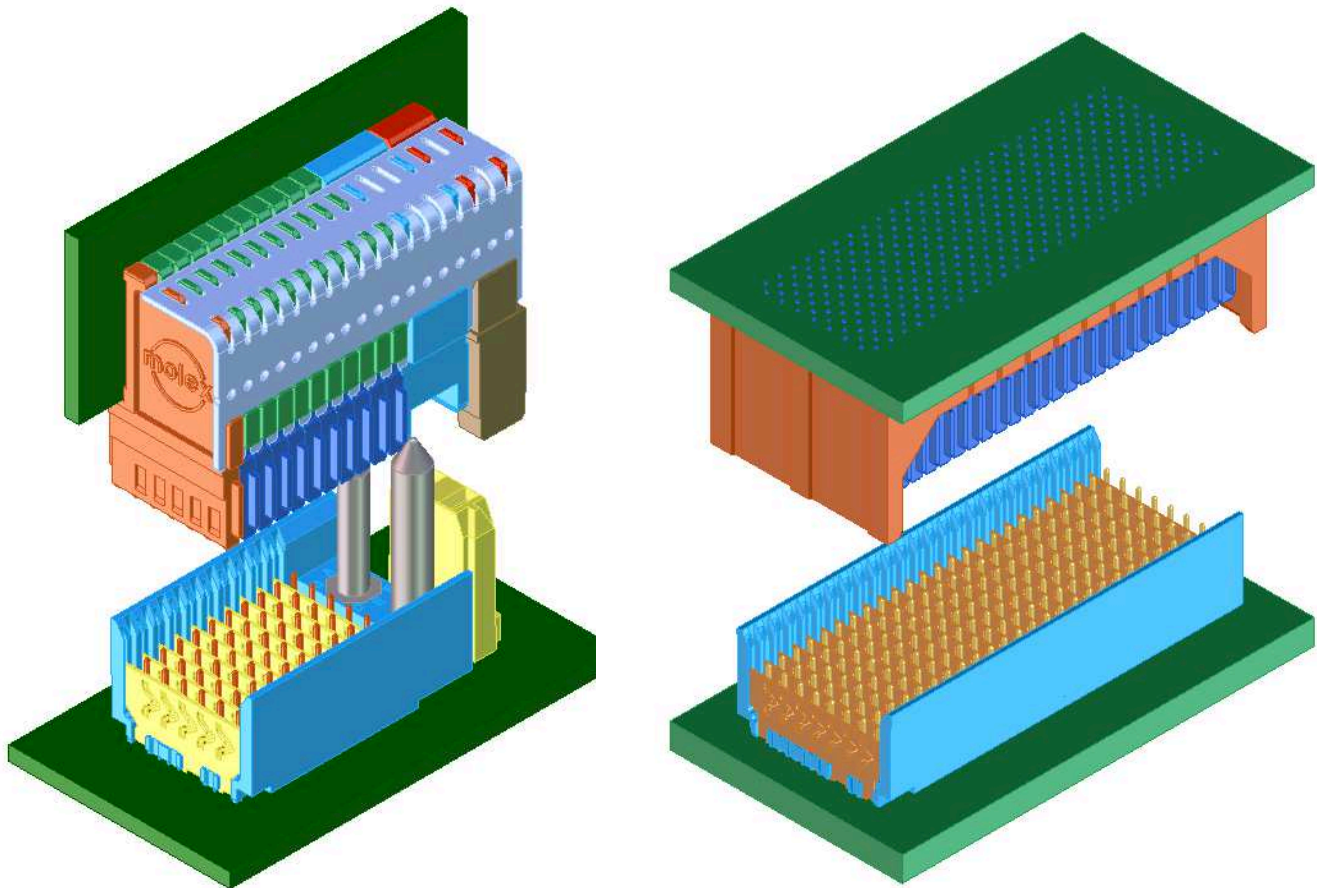




PRODUCT SPECIFICATION

PRODUCT SPECIFICATION FOR VHDM[®], VHDM-H[™] AND VHDM-HSD[™] INTERCONNECT SYSTEMS



VHDM is a registered trademark of Amphenol Corporation.
VHDM-HSD is a trademark of Amphenol Corporation.

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PRODUCT SPECIFICATION

1.0 SCOPE

This specification covers the performance requirements and test methods for the following products listed by series numbers:

- * 74057, 74058, 74059, 74073, 74074, 74077, 74335, 74336 VHDM 6 Row Backplane Signal Module
- * 74060, 74061, 74062, 74075, 74078, 74457, 74458 VHDM 8 Row Backplane Signal Module
- * 74695, 74696, 74697, 74701, 74702 VHDM-HSD 5 Row Backplane Signal Module
- * 74979, 74980, 74981, 74983, 74984 VHDM-HSD 6 Row Backplane Signal Module
- * 74649, 74650, 74651, 74658, 74659 VHDM-HSD 8 Row Backplane Signal Module
- * 75194, 75195, 75196 VHDM L-Series 6 Row Backplane Signal Module
- * 75197, 75198, 75199 VHDM L-Series 8 Row Backplane Signal Module
- * 76761, 76762, 76763 VHDM H-Series 6 Row Backplane Signal Module
- * 76134, 76135, 76136 VHDM H-Series 8 Row Backplane Signal Module

- * 74029, 75885, 75888 VHDM / VHDM-HSD 5 Row, 6 Row, and 8 Row Backplane Power Module

- * 74030 VHDM 6 Row Daughtercard Assembly
- * 74040 VHDM 8 Row Daughtercard Assembly
- * 74670 VHDM-HSD 5 Row Daughtercard Assembly
- * 74880 VHDM-HSD 6 Row Daughtercard Assembly
- * 74886 VHDM / VHDM-HSD 6 Row Daughtercard Hybrid
- * 74680 VHDM-HSD 8 Row Daughtercard Assembly
- * 74686 VHDM / VHDM-HSD 8 Row Daughtercard Hybrid
- * 75189 VHDM L-Series 6 Row Daughtercard Assembly
- * 75190 VHDM / VHDM-L 6 Row Daughtercard Hybrid
- * 75296 VHDM-HSD / VHDM-L 6 Row Daughtercard Hybrid
- * 75297 VHDM / VHDM-HSD / VHDM-L 6 Row Dcard Tri-brid
- * 75191 VHDM L-Series 8 Row Daughtercard Assembly
- * 75192 VHDM / VHDM-L 8 Row Daughtercard Hybrid
- * 75298 VHDM-HSD / VHDM-L 8 Row Daughtercard Hybrid
- * 75299 VHDM / VHDM-HSD / VHDM-L 6 Row Dcard Tri-brid
- * 76760 VHDM H-Series 6 Row Daughtercard Assembly
- * 76021 VHDM H-Series 8 Row Daughtercard Assembly

(Continued on next sheet)

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PRODUCT SPECIFICATION

- * 74600 VHDM 6 Row Right Angle Male (RAM) Assembly
- * 75165 VHDM 8 Row Right Angle Male (RAM) Assembly
- * 75286 VHDM L-Series 6 Row RAM Assembly
- * 75346 VHDM L-Series 8 Row RAM Assembly
- * 75117 VHDM 8 Row Daughtercard Stacker

The VHDM, VHDM-HSD, VHDM-H and VHDM L-Series backplane interconnect systems consist of 5, 6, and 8 row modular configurations with custom signal, power and guidance modules. These connectors are two-piece devices, which connect two printed circuit boards. The right angle and vertical receptacle connectors (daughtercard) and header pin connectors (backplane) are through hole devices with eye-of-the-needle compliant pin terminals.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAMES

VHDM, VHDM-HSD, VHDM-H and VHDM L-Series

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Refer to the appropriate sales drawings for information on dimensions, materials, platings and markings.

2.3 SAFETY AGENCY APPROVALS

UL File Number: E29179
 CSA File Number: 152514 (LR19980)

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Refer to the appropriate sales drawings and other sections of this specification for the necessary referenced documents and specifications.

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PRODUCT SPECIFICATION

4.0 RATINGS

4.1 CURRENT AND TEMPERATURE RATING

Voltage:	120 VAC RMS/DC max
Signal Contact:	1 Amp
Shield Contact (VHDM-HSD 5 Row):	1 Amp
Shield Contact (VHDM-HSD 6/8 Row):	2 Amps
Shield Contact (VHDM 6 Row):	2 Amps
Shield Contact (VHDM 8 row):	3 Amps
Power Contact:	10 Amps per blade
Maximum operating temperature:	105°
Non-operating temperature:	-55°C to 85°C

4.2 SIGNAL CONTACT MATED BULK RESISTANCE (MEASURED VALUES (mOhms))

	6 Row VHDM, H and L- Series	8 Row VHDM, H and L- Series	5 Row VHDM- HSD	6 Row VHDM- HSD	8 Row VHDM- HSD
A Row	5.8	6.9	6.7	5.3	7.8
B Row	5.7	7.5	7.3	6.1	8.3
C Row	7.9	8.4	---	---	---
D Row	8.5	9.9	9.5	8.8	11.3
E Row	9.8	10.4	10.3	9.2	11.5
F Row	10.8	11.8	---	---	---
G Row	---	12.9	---	---	15.2
H Row	---	14.0	---	---	15.5

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PRODUCT SPECIFICATION

5.0 PERFORMANCE

5.1 ELECTRICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
CONTACT RESISTANCE (LOW LEVEL)	Mated, 100mA max, 20mV per EIA-364-TP-23	10 milliohm maximum change
INSULATION RESISTANCE	Unmated, 500VDC per EIA-364-TP-21	10,000 megaohms minimum
DIELECTRIC WITHSTANDING VOLTAGE	Unmated, 750VAC per EIA-364-TP-20	No breakdown or flashover
SIGNAL CONTINUITY	Mated per EIA-364-TP-87	No interrupts greater than 10 nanoseconds
COMPLIANT PIN INTERFACE RESISTANCE	Contact inserted into PCB per EIA-364-TP-23	1 milliohm maximum
POWER BLADE CONTACT RESISTANCE	Mated, 10A per EIA-364-TP-06	3 milliohms maximum

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PRODUCT SPECIFICATION

5.2 MECHANICAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
SIGNAL WAFER MATING FORCE	Mate daughtercard and backplane assembly per EIA-364-TP-13	40g per signal pin 25g per shield chevron (nominal values) (refer to chart on sheet 7 for maximum expected values)
POWER BLADE MATING FORCE	Mate daughtercard and backplane assembly per EIA-364-TP-13	150g per blade (nominal value)
DURABILITY	200 Cycles, mated and unmated per EIA-364-TP-09	10 milliohm max change in LLCR
VIBRATION	Mated, 10-100Hz, 10g's, 24 hr, 3 axis per EIA-364-TP-28	10 milliohm max change in LLCR
MECHANICAL SHOCK	Mated, 30g half-sine, 11ms, 3 axis per EIA-364-TP-27	10 milliohm max change in LLCR
NORMAL FORCE	Apply perpendicular force to terminal at rate of 25+/-6mm per minute	Signal: 50g min Power: 100g min

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PRODUCT SPECIFICATION

TOTAL CONNECTOR MATING FORCE PER PIN (maximum expected values, standard mate shields)

Product Type	Backplane Pin Length			
	6.25 mm	5.15 mm	4.75 mm	4.25 mm
VHDM 6 Row	85g	100g	100g	100g
VHDM 8 Row	85g	100g	100g	100g
VHDM-H 6 Row	85g	100g	100g	100g
VHDM-H 8 Row	85g	100g	100g	100g
VHDM-HSD 5 Row	85g	100g	100g	100g
VHDM-HSD 6 Row	85g	100g	100g	100g
VHDM-HSD 8 Row	85g	100g	100g	100g
VHDM L-Series 6 Row	85g	85g	85g	85g
VHDM L-Series 8 Row	85g	85g	85g	85g

Note: The values contained in the chart above represent the maximum expected peak mating force for the entire connector normalized to a per pin value. This force value includes all of the typical elements of total connector mating: signal engagement, shield engagement, and plastic engagement. As shown, the 6.25mm pin provides for the lowest total mating force due to the fact that its peak force occurs prior to the engagement of the shield.

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PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL PERFORMANCE

ITEM	TEST CONDITION	REQUIREMENT
THERMAL SHOCK	Mated, 5 cycles from -55°C to 85°C per EIA-364-TP-32	10 milliohm max change in LLCR
TEMPERATURE LIFE	Mated, +105°C for 1000 hours per EIA-364-TP-17	10 milliohm max change in LLCR
HUMIDITY	Mated, 600 hours from +25°C to +65°C per EIA-364-TP-31	10 milliohm max change in LLCR
DUST	Unmated per EIA-364-TP-50	10 milliohm max change in LLCR
MIXED FLOWING GAS	10 days unmated, 10 days mated, per EIA-364-TP-65 and ASTM B827	10 milliohm max change in LLCR

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PRODUCT SPECIFICATION

5.4 COMPLIANT PIN PERFORMANCE

5.4.1 Insertion Force for Various Plating Types (Typical)

COMPONENT	TIN / LEAD		BARE Cu / OSP	
	Typical	Maximum	Typical	Maximum
VHDM / VHDM-HSD Backplane Pin (single pin)	8 lbs	10 lbs	8 lbs	10 lbs
VHDM / VHDM-HSD Backplane Shield (single pin)	4 lbs	6 lbs	4 lbs	8 lbs
VHDM / VHDM-HSD Daughtercard Signal (single pin)	4 lbs	6 lbs	4 lbs	8 lbs
VHDM Daughtercard Shield (single pin)	3 lbs	4 lbs	3 lbs	6 lbs
VHDM-HSD Daughtercard Shield (single pin)	4 lbs	6 lbs	4 lbs	8 lbs
Backplane/Daughtercard Power (single contact with 4 pins)	38 lbs	75 lbs	38 lbs	75 lbs
VHDM-H Series Daughtercard Signal (single pin)	5 lbs	8 lbs	5 lbs	8 lbs
VHDM-H Series Daughtercard Shield (single pin)	5 lbs	8 lbs	5 lbs	8 lbs
VHDM-H Series Backplane Signal (single pin)	5 lbs	8 lbs	5 lbs	8 lbs
VHDM-H Series Backplane Shield (single pin)	5 lbs	8 lbs	5 lbs	8 lbs

Note: "Maximum" columns reflect maximum expected values for insertion forces when tested in plated through holes drilled and plated as described in Section 5.4.3. Plating surface finish and PCB materials will impact actual values.

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PRODUCT SPECIFICATION

5.4.2 Retention Force for Various Plating Types (Typical)

COMPONENT	TIN / LEAD		BARE Cu / OSP	
	Typical	Minimum	Typical	Minimum
VHDM / VHDM-HSD Backplane Pin (single pin)	5.5 lbs	4 lbs	5 lbs	4 lbs
VHDM Backplane Shield (single pin)	3 lbs	1 lb	2 lbs	1 lb
VHDM-HSD Backplane Shield (single pin)	2.5 lbs	1.5 lbs	2 lbs	1.5 lbs
VHDM / VHDM-HSD Daughtercard Signal (single pin)	2.5 lbs	1.5 lbs	2 lbs	1.5 lbs
VHDM Daughtercard Shield (single pin)	2 lbs	1 lb	1.5 lbs	1 lb
VHDM-HSD Daughtercard Shield (single pin)	2.5 lbs	1.5 lbs	2 lbs	1.5 lbs
Backplane/Daughtercard Power (single contact with 4 pins)	25 lbs	10 lbs	22 lbs	10 lbs
VHDM-H Series Daughtercard Signal (single pin)	2 lbs	1.5 lbs	2 lbs	1.5 lbs
VHDM-H Series Daughtercard Shield (single pin)	2 lbs	1.5 lbs	2 lbs	1.5 lbs
VHDM-H Series Backplane Signal (single pin)	2 lbs	1.5 lbs	2 lbs	1.5 lbs
VHDM-H Series Backplane Shield (single pin)	2 lbs	1.5 lbs	2 lbs	1.5 lbs

Note: "Minimum" columns reflect minimum expected values for retention forces when tested in plated through holes drilled and plated as described in Section 5.4.3. Plating surface

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PRODUCT SPECIFICATION

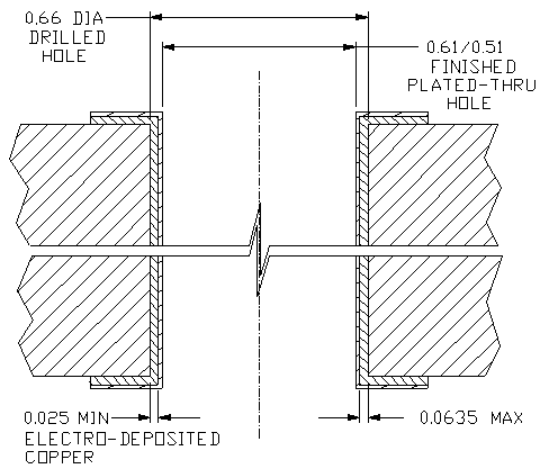
finish and PCB materials will impact actual values.

Radial hole deformation: 1.5 mils max

Axial hole deformation: 1.0 mil max

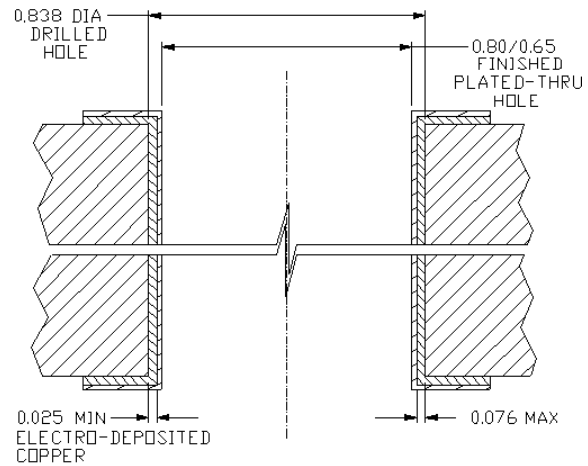
5.4.3 Printed Circuit Board Specifications

Recommended Backplane PCB Thickness: 1.8mm minimum
 Recommended Daughtercard PCB Thickness: 1.8mm minimum
 VHDM, VHDM-L, & VHDM-HSD Signal/Shield
 Primary Drilled Hole Size: 0.66 mm (#71 Drill)
 VHDM-H Signal/Shield
 Primary Drilled Hole Size: 0.57mm (#74 Drill)
 Power Primary Drilled Hole Size: 0.838 mm (#66 Drill)



(NOTE: FINISHED HOLE SIZE ALLOWED TO 0.495 MINIMUM FOR HASL FINISHES)

VHDM, VHDM-L, & VHDM-HSD HOLE PLATING DETAIL DAUGHTERCARD OR BACKPLANE SIGNAL AND SHIELD CONTACTS

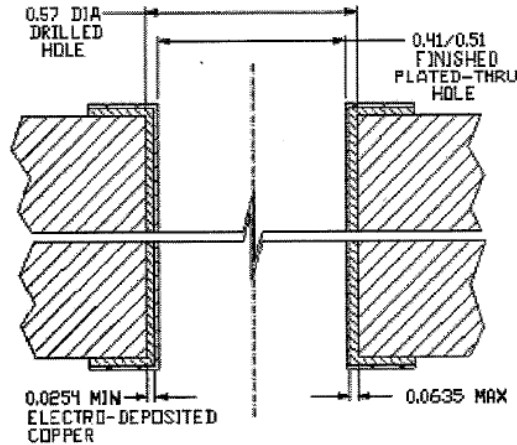


POWER HOLE PLATING DETAIL DAUGHTERCARD OR BACKPLANE POWER CONTACTS

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PRODUCT SPECIFICATION



**H-SERIES HOLE PLATING DETAIL
DAUGHTERCARD OR BACKPLANE
SIGNAL AND SHIELD CONTACTS**

5.4.4 Torque Specification for Mounting Screws

Backplane and Daughtercard Screws:

Screw Type	Board Thickness	Recommended Torque
2-56 Machine Screw	1.8 mm MIN	2.5 +/- 0.5 in-lbs
2-32 Self-Tapping Screw	1.8 mm MIN	*2.5 +/- 0.5 in-lbs

*Note: The thread forming screws used for the daughtercard guidance modules will require varying torque to seat the screw dependent upon the screw engagement in the module. The screw engagement into the module will be impacted by both the screw length and the PCB thickness. It is recommended that the torque applied be the minimum necessary to fully seat the screw for the specific application.

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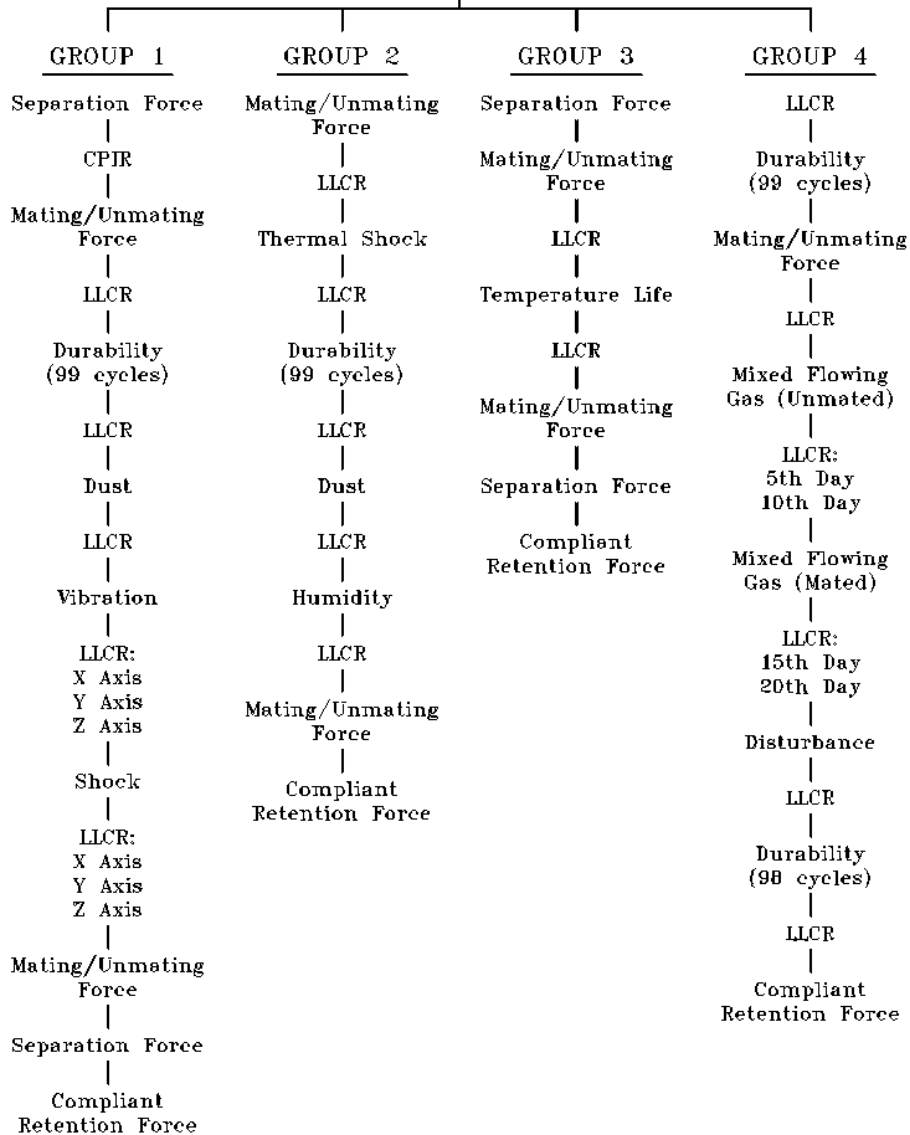


PRODUCT SPECIFICATION

6.0 TEST SEQUENCE

Bellcore Test Plan

SAMPLE PREPARATION



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