

CUSTOMER: DELTA GMBH
 REQUISITION:
 MAYEKAWA NO.: MPE-004
 PROJECT: Refrigeration unit
 LOCATION: TBA
 REF. NO.: SQ22000787
 ITEM NO: RU-6001

INSPECTION & TEST PLAN (ITP)



ITEM DESCRIPTION		MANUFACTURER	LEGEND:						
Package Assembly Compressor Skids		NASH, UAE	AR	Approval Required	W	Witness Point	MFR	MANUFACTURER	
			H	Hold Point	MTR	Material Test Report	CON	CONTRACTOR, INC.	
			R	Document Review	T/C	Test Certificate Required	CL	CLIENT	
			V	Visual Inspection	HR	Hold for Review			
					JIS	Japanese Standard			
NO	QUALITY RELATED ACTIVITY	APPLICABLE SPECIFICATION	ACCEPTANCE CRITERIA	VERIFYING DOCUMENT	CONTROL POINTS			T/C	REMARKS
					MFR	CON	CL		
10.1	Package Mechanical Assembly: - Verify that All Equipment are Properly Set - Verify that All Instruments are Installed per P&ID, G.A. Drawing & Inst. Mounting Detail Drawing - Verify that Instrument & Control Mounting Positions Provide Visibility & Access - Check Routing of Piping to Ensure that Proper Clearance is Allowed for Correct Application of Insulation where required - Verify that Maintenance Access is Allowed for Components and Controls - Check Routing of All Trays & Control Tubing to Ensure Maximum Access - Check that All Piping Runs are Properly Supported - Make sure Grating is used on Maintenance Area Only	Assembled Unit Testing Procedure MPE-004-20035	Approved MFR Engineering Standard	Visual Inspection	H		H	---	
10.2	Package Electrical Inspection: - Verify that All Instrument Area Classification is Stamped on Housing - Verify that the Junction Box Housing(s) Meet the Area Classification - Verify that there are No Splices Between Termination Points - Verify that All Equipments are Properly Grounded - Verify that All Wiring & Cables are Properly Tagged & Labeled with Heat Shrink Non-Permeable Tags at Both Ends of the Interconnecting Cable. - Verify that All Wiring & Cables are Checked for the Proper Insulation and Color Coding	Assembled Unit Testing Procedure MPE-004-20035	Approved MFR Engineering Standard	MFR Standard Certificate	H		H	T/C	

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	- Verify that Cable Glands are UL, FM or CSA Labeled - Verify that All Terminals are Properly Identified Inside the Panel for Wire Landing - Confirm that Cable Entries are Made on the Bottom of Junction Boxes - Verify that all the Instruments are Clearly Labeled with Engraved, Phenolic Type, Plastic Tags as per the "AS-BUILT" Drawings - Verify that All Wiring are Provided with Suitable Crimps for Termination and Check Tightness of All Wiring Termination Points - Verify that the Cable Runs Do Not Impede Access to Rack Mounted Instruments - Verify that Electronic Signal Wiring are Stranded Copper, min. size of 16 AWG for Single, 18 AWG for Multi-conductor - Verify that Wires are Segregated and Separated - Verify Terminal Block Type, Connections & Connectors, and Interconnections - Verify that Heat Shrink Non-Permeable Tubes are used as Insulators. Electrical Tapes are Prohibited. - Perform a Continuity Test to All Loops Independently - Verify General Wiring Size, Type and Color Coding								

Indicate properly tagged

Cable as per cable datasheet.

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10.3	Instrument Inspection: - Verify that the Instruments are Rated for the Service - Verify that All Instruments are Installed per P&ID, G.A. Drawing & Inst. Detail Drawing - Verify that the Connection Size & Location are Correct - Verify Instrument Calibration - Verify Area Classification Stamp on Housing (If Applicable) - Verify Proof Pressure on Pressure Instrument, Insertion, Overall Length, and Thermowell Material on Temperature Instrument, Float & Housing Material on Level Instrument - Verify Dial Indicator Size - Verify Nameplate ID and Data - Verify that Instrument Piping, Tubing and Valves Materials, Sizes and Trims are Correct - Verify that Instruments are Installed per Client Drawing Requirements - Verify Process Connections, Threaded or Flanged per ANSI B16.5 - Verify that Bridge-Weld & Brace, Seal Welded and Socket-Welded Valves are Installed per CLIENT Drawing Requirements - Verify Installation, Venting, Drains and Accessibility of Safety Relief Valves. Block Valves of Safety Relief Valves to be Painted Orange - - Verify All Pressure & D/P Instruments in Liquid or Condensate Service are Self-Venting.	ISA Data Sheets MPE-004-20100	Approved MFR Engineering Standard	Certificate of Compliance, Calibration Certificate	H		<div>H</div>	T/C	

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10.4	Package Pneumatic Leak Test: - Verify that All Hand Valves, Except Vent & Drains, are Fully Opened - Ensure that the Pressure will be Applied to Both Sides of All Control Valves - Verify that Instrument Tubing Valves are Open so that Impulse Lines are Exposed to Pressure and Leak Test - Verify that All Instrument Air Headers and Tubing are Leak Tested - Verify that Installed Relief Valves are Properly Removed as Necessary - Verify that All Gauges are Properly Calibrated Prior to the Test - Check for Leaks in the System at All Welds & Joints using Soap (Snoop) Solution - Record the Ambient Temperature, Pressure Level, & the Length of Time that the Pressure was Held (Test Duration)	Assembled Unit Testing Procedure MPE-004-20035	Approved MFR Engineering Standard	MFR Standard Certificate	H		<div>H</div>	T/C	

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10.5	Package Oil Flushing, Cleanliness & Oil System Operational Test - Verify Oil Lines from Oil Header to Compressor are Blocked and Return Oil to the Oil Separator via a 100 Mesh Screen - Ensure that All Filter Elements are Installed - Verify that Oil Separator has Sufficient Oil Capacity - Check Hand Valves for Correct Position - Check Hand Valves for Correct Position - Verify that Oil Lines, Oil Separator have been Frequently Hammered - Verify Oil Pump Relief Valve Settings - Verify Oil Pressure Control Valve Setting - Verify Cleanliness of Strainers After Final Test Run is Completed - Verify that Oil Filter(s) have been Replaced After Completion of Flushing - Verify that Lube Oil Has Been Removed from the Oil Separator	Assembled Unit Testing Procedure MPE-004-20035	Approved MFR Engineering Standard	MFR Standard Certificate	H			T/C	

Not Applicable

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10.6	Package Painting & Rust Prevention Performance and Storage - Pre-blast check a) Solvent or Detergent Cleaning Before Abrasive Blast (If Required) b) Temperature & Dew Point c) Removal of Rough Welds, Cut- Offs, Weld Splatter, and Arc Strikes - Equipment a) Compressed Air Supply Blotter Test - Cleaning: Spent Abrasive Removal - Primer on Abrasive Cleaned Surfaces - Paint & Coatings Preparation - Paint & Coatings Application a) Verify Atmospheric Conditions & Substrate Temperature are Suitable for Paint Application b) Inspect Substrate Surface for Contamination c) Ensure Paint is Filtered Through a 30 to 60-Mesh Screen d) Ensure the Paint is Continuously Agitated During the Coating Process e) Verify Wet & Dry Film Coating Thicknesses f) Verify Recoating Intervals - Visual Inspection of Finished Coatings	Painting Procedure MPE-004-20030 Assembled Unit Testing Procedure MPE-004-20035	Approved MFR Engineering Standard	MFR Standard Certificate	H		W	T/C	

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10.7	Package Preparation for Shipment - Cover & Bolt All Pipe Openings to Atmosphere - Check that a 20-25 PSIG Holding Charge of Nitrogen has been Applied - Confirm that One Set of the Electrical Drawings has been Placed Inside the Junction Boxes - Verify that All Junction Boxes, Controllers, & Any Component Subject to Air Exposure has been Wrapped with Plastic Sheets - Verify that Coupling Spacers have been Removed & Greased Prior to Shipment (Ship-Loose Item) - Verify that Desiccant Bags have been Placed Inside All Junction Boxes - Verify that Each Motor, Compressor, & Pump Shafts have been Coated with Grease - Confirm that All Instrument Tag Numbers have been Attached Properly to All Instruments - Verify that Main Compressor coupling and Oil Pump Couplings, Coupling Guards have been Installed - Confirm that Appropriate Warning Tags have been Installed on the Unit - Inspect & Verify that All Ship Loose Items are Correct in Quantity and Tagged per the Packing List	Assembled Unit Testing Procedure MPE-004-20035	Approved MFR Engineering Standard	MFR Standard Certificate Packing List MPE-004-20050	V		W	T/C	
10.8	Documentation - Instruction Manual - Code Data (Manufacturing) Record Book	Client Spec. & MFR Engineering Standard	Approved MFR Engineering Standard	Instruction and Operation Manual MPE-004-20090, Manufacturing Record Book MPE-004-20091	R		R&A	---	
10.9	Obtain Release from Contractor and/or CLIENT Assigned Inspection Agency	Assigned by Purchaser	Assigned by Purchaser	Inspection Release Certificate	H		H	T/C	