Sr. No.			Description	UOM (Wherever Applicable)	Data (Common For All Models)
A			General Points		
	1		Cooling Capacity	ton_R	Refer Teksel Software
	2		Power Consumption	kW	Refer Teksel Software
	3		Specific Power Consumption	kW/ton_R	Refer Teksel Software
	4		Co-Efficient of Performance (COP)	kW/kW	Refer Teksel Software
	5		No. of Compressors	Nos.	→
	6		No. of Individual Refrigerant Circuits	Nos.	→
	7		Refrigerant		
		i	Name	-	R134a
		ii	Quantity	kg	Refer ESP-18-19-007
		iii	Technical Specifications	-	Refer ESP-18-19-003
	8		Sound Pressure Level		
		i	Noise Level	dB	Refer ESP-15-16-104
		ii	Measuring Standard	-	ANSI/AHRI Standard 575-2008
	9		Insulation Details		
		i	Material	-	Closed Cell Nitrile Foam
		ii	Insulation Thickness on Various Parts	-	For Standard Temperature Range (LWT upto 3 0C)
			Evaporator Shell	mm	32
			Evaporator Tubesheet	mm	19
			Evaporator Dished End	mm	19
			Evaporator M.W.Box (If Applicable)	mm	19
			Evaporator Support Plate	mm	19
			Compressor Motor Body	mm	19
			Suction Line Assembly	mm	19
			Liquid Line Assembly	mm	9
		iv	Density	kg/m^3	76.6
		v	Thermal Conductivity	W/m.K	0.035 (at 0 0C Mean Temperature)
		vi	Standard	-	IS 14164

		vii	Adhesive	-	Blend of Synthetic Polymers and Synthetic Resin
		viii	Insulation Specifications	-	Refer ESP-18-19-004
	10		Vibration		
		i	Vibration Level	mm/sec	Less than 1.5 mm/sec
		ii	Vibration control	-	Rubber Pads (Standard) / Spring Isolators (At an Additional Cost)
		iii	Standard	-	IS 12075
	11		Painting Specification		
		i	Paint Type	-	RAL 7035
		ii	Standard	-	Coating as per KCPL Standards
	12		Overall Dimensions		
		i	Approx. Length	mm	Refer General Arrangement & Foundation Detail Drawing
		ii	Approx. Width	mm	Refer General Arrangement & Foundation Detail Drawing
		iii	Approx. Height	mm	Refer General Arrangement & Foundation Detail Drawing
	13		Space Clearances Required		
		i	Plain End Side (For Tube Cleaning)	mm	Refer General Arrangement & Foundation Detail Drawing
		ii	All Other Sides	mm	Refer General Arrangement & Foundation Detail Drawing
		iii	Overhead	mm	Refer General Arrangement & Foundation Detail Drawing
	14		Weight		
		i	Approx. Shipping Weight	kg	Refer General Arrangement & Foundation Detail Drawing
		ii	Approx. Operating Weight	kg	Refer General Arrangement & Foundation Detail Drawing
	15		Cable Sizes		
		i	Aluminum Cable	-	Refer ESP-14-15-01
		ii	Copper Cable	-	Refer ESP-14-15-01
B			Compressor Details		
	1		Make	-	Kirloskar Chillers Private Limited
	2		Type / Description	-	Semi-Hermetic Centrifugal Compressor
	3		Model	-	Refer Teksel Software
	4		Drive	-	Gear Driven
	5		Compressor Speed	RPM	Refer "KSC-R134a-02" Sheet
	6		Capacity Control Percentage	%	Refer Teksel Software
	7		Type of Capacity Control	-	Stepless
	8		Capacity Control Mechanism	-	IGV
	9		Design Pressure	bar	16

	10		Bearings		
		i	Types of Bearings	-	Hydrodynamic Bearings - For Radial Load and Thrust Load
		ii	Material of Construction	-	Aluminum
		iii	Class of Bearing	-	Proprietary Data
	11		Lubrication		
		i	Type	-	Forced Lubrication by Oil Pump
		ii	Lubricating Oil	-	Synthetic Oil
		iii	Grade of Lubricating Oil	-	Proprietary Data
		iv	Quantity	Liter	Refer General Arrangement & Foundation Detail Drawing
	12		Compressor Components MOC		
		i	Impeller	-	Aluminum
		ii	Casing	-	Cast Iron
		iii	Shaft	-	Alloy Steel
	13		Physical Data of Compressor		
		i	Impeller Diameter	mm	Refer "KSC-R134a-02" Sheet
		ii	No. of Impeller Stages	Nos.	Single Stage
	14		Oil Filter		
		i	Micron Rating	Micron	4
		ii	Material of Construction	-	Resin Impregnated Fibres Supported with Screen
		iii	Quantity	Nos.	1 No. per Compressor for KSC063-KSC087 2 Nos. per Compressor for KSC100-KSC126
	15		Copressor Isolation Type		
		i	At Suction	-	No Isolation
		ii	At Discharge	-	Check Valve (NRV)
C			Compressor Motor Details		
	1		Make	-	Kirloskar Approved Vendor
	2		Motor Type	-	Semi-Hermetic Squirrel Cage Induction Motor
	3		Type of Duty	-	Continuous
	4		Motor Rating	kW	Consult with Engineering Department on Case to Case Basis
	5		Motor Speed (Synchronous)	RPM	3000
	6		Ingress Protection (IP)	-	NA, Being Semi-Hermetic Type
	7		GD^2 of Rotor	-	Proprietary Data
	8		Whether SPDP or TEFC?	-	NA, Being Semi-Hermetic Type

	10		Performance Indicators		
		i	Motor Efficiency Class	-	NA
		ii	Motor Power	kW	Consult with Engineering Department on Case to Case Basis
		iii	Motor Efficiency	-	Consult with Engineering Department on Case to Case Basis
		iv	Power Factor	-	Consult with Engineering Department on Case to Case Basis
		v	Class of Insulation	-	Class F
	11		Motor Cooling		
		i	Motor Cooling Type	-	Refrigerant Cooled
		ii	Cooling Mechanism	-	By Liquid Refrigearnt
		iii	Temperature at full load	^{0}C	10 to 15 (At Normal Condtions)
	12		Current Details		
		ii	Rated Load Current	A	Refer Teksel Software
		iii	Full Load Current	A	Consult with Engineering Department on Case to Case Basis
		iv	Inrush/Starting Current	A	Consult with Engineering Department on Case to Case Basis
		v	Locked Rotor Current	A	Consult with Engineering Department on Case to Case Basis
		vi	Starting Torque	N.m	Consult with Engineering Department on Case to Case Basis
		vii	No Load Current	A	Consult with Engineering Department on Case to Case Basis
	13		Control Settings		
		i	No. of Starts per Hour	Nos.	4
		ii	Time Between STOP to START	Sec	300
		iii	Time Between START to START	Sec	900
E			Oil Sump and Pump Details		
	1		Sump Make	-	Kirloskar Approved Vendor
	2		Pump Details		
		i	Type	-	Submersible, G-Rotor Type
		ii	Make	-	Kirloskar Approved Vendor
		iii	Pump Capacity	LPM	45
		iv	Motor Type	-	Single Phase Induction Motor
		v	Motor Rating of Pump	HP	2.5
		vi	Motor Speed	RPM	3000
		vii	Power Supply	V/Hz	230V/50Hz/Single Phase
	3		Material of Construction		
		i	Sump MOC	-	Cast Iron

	4		Physical Details		
		i	Shell Diameter	inch	16
		ii	Approx. Height	mm	570
	5		Oil Heater Details		
		i	Make	-	Kirloskar Approved Vendor
		ii	Quantity	Nos.	2 per Oil Sump
		iii	Power Supply	V	230
		iv	Rating	W	200
F			Oil Cooler		
	1		Type	-	Plate Type
	2		Quantity	Nos.	One per Compressor
	3		Heat Duty	kW	Depends on Working Conditions
	4		Method of Cooling	-	Refrigerant Cooled
	5		Material of Construction	-	Brazzed PHE, Plate Material - SS
	6		Pressure Drop		
		i	Oil Side	bar	less than 0.5
		ii	Refrigerant Side	bar	Proprietary Data
G			Evaporator Details		
	1		Model	-	Refer Teksel Software
	2		Design Code	-	As per KCPL Standards
	3		Type	-	Shell and Tube Flooded Design
	4		Tube Side (Fluid)	-	Chilled Water
	5		Shell Side (Fluid)	-	Refrigerant
	6		Design Parameters		
		i	Design Temperature (Refrigerant Side)	^{0}C	65
		ii	Max. Operating Pressure (Refrigerant Side)	bar	Refer ESP-07-08-107
		iii	Design Pressure (Refrigerant Side)	bar	Refer ESP-07-08-107
		iv	Test pressure (Refrigerant Side)	bar	Refer ESP-07-08-107
		v	Testing method (Refrigerant Side)	-	Refer ESP-07-08-107
		vi	No. of Passes (Refrigerant Side)	Nos.	Single Pass
		vii	Design Temperature (Water Side)	^{0}C	65
		viii	Max. Operating Pressure (Water Side)	bar	Refer ESP-07-08-107
		ix	Design Pressure (Water Side)	bar	Refer ESP-07-08-107

		x	Test pressure (Water Side)	bar	Refer ESP-07-08-107
		xi	Testing method (Water Side)	-	Refer ESP-07-08-107
		xii	No. of Passes (Water Side)	Nos.	Two Pass
		xiii	Water Velocity	m/s	Less than 3 m/s
		xiv	Inlet Pressure (Water Side)	bar	Depends on Site Piping Layout (Maximum Allowable - 9.4 bar)
		xv	Evaporating Temperature	^{0}C	Consult with Engineering Department on Case to Case Basis
	7		Physical Data of Evaporator		
		i	Overall Length of Evaporator	ft	Refer "HX Details" Sheet
		ii	Shell Diameter	inch	Refer "HX Details" Sheet
		iii	Shell Thickness	mm	Refer "HX Details" Sheet
		iv	Approx. Shell Length	mm	Refer "HX Details" Sheet
		v	Material of Construction of Shell	-	Mild Steel
		vi	Material Standard of Shell	-	Refer "MOC" Sheet
		vii	Tube Type/ Nature of Tube Surface	-	Integral Helical Fins on the Outside Surface and Integral Helical Ridges on the Inside Surface
		viii	Tube Length	mm	Refer "HX Details" Sheet
		ix	Tube Diameter	mm	Refer "HX Details" Sheet
		x	Tube Thickness	mm	Refer "HX Details" Sheet
		xi	Material of Construction of Tube	-	Cu
		xii	Material Standard of Tube	-	Refer "MOC" Sheet
		xiii	Water Volume in Evaporator	Liter	Refer Teksel Software
	8		Water Box Details		
		i	Type	-	Standard - Dish Ends (M.W.Box - Optional)
		ii	Material	-	Mild Steel
		iii	Material Standard	-	Refer "MOC" Sheet
		iv	Nozzle size	NB	Refer Teksel Software
		v	End connection	-	Standard - Victaulic Conn. (Flanged Conn. - Optional)
		vi	MOC of Water Side Gasket	-	NAM AF 120
		vii	MOC of Refrigerant Side Gasket	-	NAM AF 159
	9		Accessories Provided		
		i	Pressure Relief Valve	-	Spring Loaded (For Safety Valve Set Pressure Refer ESP)
		ii	Drain/Vent Valves	Inch	Plugged Connection Provided (3/8" NPT)
H			Condenser Details		

	1		Model	-	Refer Teksel Software
	2		Design Code	-	As per KCPL Standards
	3		Type	-	Shell and Tube Flooded Design
	4		Tube Side (Fluid)	-	Chilled Water
	5		Shell Side (Fluid)	-	Refrigerant
	6		Design Parameters		
		i	Design Temperature (Refrigerant Side)	^{0}C	100
		ii	Max. Operating Pressure (Refrigerant Side)	bar	Refer ESP-07-08-107
		iii	Design Pressure (Refrigerant Side)	bar	Refer ESP-07-08-107
		iv	Test pressure (Refrigerant Side)	bar	Refer ESP-07-08-107
		v	Testing method (Refrigerant Side)	-	Refer ESP-07-08-107
		vi	No. of Passes (Refrigerant Side)	Nos.	Single Pass
		vii	Design Temperature (Water Side)	^{0}C	100
		viii	Max. Operating Pressure (Water Side)	bar	Refer ESP-07-08-107
		ix	Design Pressure (Water Side)	bar	Refer ESP-07-08-107
		x	Test pressure (Water Side)	bar	Refer ESP-07-08-107
		xi	Testing method (Water Side)	-	Refer ESP-07-08-107
		xii	No. of Passes (Water Side)	Nos.	Two Pass
		xiii	Water Velocity	m/s	Less than 3 m/s
		xiv	Inlet Pressure	bar	Depends on Site Piping Layout (Maximum Allowable - 9.4 bar)
		xv	Condensing Temperature		Consult with Engineering Department on Case to Case Basis
	7		Physical Data of Condenser		
		i	Overall Length of Condenser	ft	Refer "HX Details" Sheet
		ii	Shell Diameter	inch	Refer "HX Details" Sheet
		iii	Shell Thickness	mm	Refer "HX Details" Sheet
		iv	Shell Length	mm	Refer "HX Details" Sheet
		v	Material of Construction of Shell	-	Mild Steel
		vi	Material Standard of Shell	-	Refer "MOC" Sheet
		vii	Tube Type/ Nature of Tube Surface	-	Integral Helical Fins on the Outside Surface and Integral Helical Ridges on the Inside Surface
		viii	Tube Length	mm	Refer "HX Details" Sheet
		ix	Tube Diameter	mm	Refer "HX Details" Sheet
		x	Tube Thickness	mm	Refer "HX Details" Sheet

		xi	Material of Construction of Tube	-	Cu
		xii	Material Standard of Tube	-	Refer "MOC" Sheet
		xiii	Water Volume in Condenser	Liter	Refer Teksel Software
	8		Water Box Details		
		i	Type	-	Standard - Dish Ends (M.W.Box - Optional)
		ii	Material	-	Mild Steel
		iii	Material Standard	-	Refer "MOC" Sheet
		iv	Nozzle size	NB	Refer Teksel Software
		v	End connection	-	Standard - Victaulic Conn. (Flanged Conn. - Optional)
		vi	MOC of Water Side Gasket	-	NAM AF 120
		vii	MOC of Refrigerant Side Gasket	-	NAM AF 159
	9		Accessories Provided		
		i	Pressure Relief Valve	-	Spring Loaded (For Safety Valve Set Pressure Refer ESP)
		ii	Drain/Vent Valves	Inch	Plugged Connection Provided (3/8" NPT)
I			Suction Line		
	1		Design Code	-	ASME B31.3
	2		Isolation Valve	-	No Isolation
	3		Material of Construction	-	Carbon Steel
	4		Material Standard	-	Refer "MOC" Sheet
	5		Angle Valve	-	Provided on Suction Line For Oil Recovery Line
J			Discharge Line		
	1		Design Code	-	ASME B31.3
	2		Isolation Valve	-	Check Valve (NRV)
	3		Material of Construction	-	Carbon Steel
	4		Material Standard	-	Refer "MOC" Sheet
	5		Skin Type Thermowell	-	Provided on Discharge Line For Discharge Temp. Sensor
K			Liquid Line		
	1		Design Code	-	ASME B31.3
	2		Expansion Valve		
		i	Type	-	Electronic Expansion Valve
		ii	Make	-	Refer "Make List" Sheet
		iii	Quantity	Nos.	Consult with Engineering Department on Case to Case Basis
		iv	Sight Glass	-	Inbuilt

		v	Moisture Indicator	-	NA
	3		Filter Drier	-	NA
	4		Material of Construction	-	Copper
	5		Material Standard	-	Refer "MOC" Sheet
N			Starter and Control Panel		
	1		Panel Enclosure	-	Starter and Control Panel Integrated in Single Fabricated Box
	2		Make	-	Kirloskar Approved Vendor
	3		Material of Enclosure	-	Rittal Enclosure - Sheet Steel Fabricated Enclosure - CRCA Sheet
	4		Thickness of Enclosure	mm	Rittal Enclosure - (Control Panel) Enclosure - 1.5 mm Door - 2 mm Fabricated Enclosure - (Starter Panel) Load Bearing Member - 2 mm Non-Load Bearing Member - 1.6 mm
	5		Ingress Protection (IP)	-	IP54
	6		Painting Specification		
		i	Paint Type	-	RAL 7035
		ii	Standard	-	Coating as per KCPL Standards
	7		Mounting Arrangement	-	Control Panel - Mounted on Chiller Starter Panel - Free Standing (Mounted on Chiller - Optional)
	8		Type of Starter	-	Star-Delta Starter (Soft Starter - Optional)
	9		Type of Isolation	-	MCCB for Star-Delta Starter FSD for Soft Starter
	10		Type of Protection	-	MCCB for Star-Delta Starter FSD for Soft Starter
	11		Switchgear Make	-	Siemens
	12		Electrical and Control Cables	-	Power - PVC Insulated Single Core (Vtg. Grade 1.1 kV) Control- PVC Insulated Single Core, Multicore Cable (Vtg. Grade 1.1 kV) Signal- Shielded Cable
	13		Optional Features		

		i	Phase Indicating Lamps	-	Special-Optional
		ii	Hooter	-	Special-Optional
		iii	Energymeter	-	Special-Optional
		iv	Door Handle	-	Special-Optional
		v	LOTO Arrangement	-	Special-Optional
O			Controller		
	1		Make	-	Refer "Make List" Sheet
	2		Transmitters	-	NA
	3		Oil Level Switch	-	Yes, Provided
	4		Oil Level Failure Trip	-	Yes, Provided
	5		LP Switch and Gauge	-	No, Controller Program will Take Care of Low Pressure
	6		HP Switch and Gauge	-	No, Controller Program will Take Care of High Pressure
	7		Chilled Water Flow Failure	-	Yes
	8		Cooling Water Flow Failure	-	Yes
	9		Reverse Rotor Protection	-	No
	10		High/Low Voltage Trip	-	Yes
	11		Low Current Trip (Current Based-Analog)	-	Yes
	12		High Current Trip (Current Based-Analog)	-	Yes
	13		Phase Failure/Reverse Phasing Trip	-	Yes
	14		Earth Fault Trip	-	No
	15		Communication Through RS232/RS485	-	RS485
	16		Display of Microprocessor	-	Yes
	17		Type of Display	-	13'' Touch Screen Display
	18		Remote Monitoring Facility	-	Yes
	19		Output to DCS	-	Applicable (Only if RS485 is Available)

KSC063	KSC079	KSC087	KSC100	KSC113	KSC126
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