

Unit Exchange Spares:**Annexure - GA1**

(* 'set' means as used in '3-car unit')

S No.	Description	Part No.	Unit *	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
					F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
1	Transformer		Nos.	2										
2	Traction Motor with half coupling		Nos.	20										
3	Power Converter and Inverter		Set	1										
4	Auxiliary Converter with battery charger		Set	1										
5	Vacuum Circuit Breaker		Nos.	2										
6	Complete Motor Bogie equipped with Traction Motors, Wheel Sets and brake units etc.		Set	4										
7	All types of Complete Trailer Bogie equipped with Wheel Sets and brake units etc.		Set	4										
8	Motor car wheel sets complete with drive mechanism, TBU's, axle box and bearings etc.		Set	6										
9	Trailer car wheel set complete with TBU's, axle box, bearing etc.		Set	6										
10	25 kV cable with HV bushing and connector.		Set	5										
11	Battery set for 3 car unit with inter connectors		Set	3										
12	Pantograph with base insulators and its control panel		Nos.	14										
13	All Electrical monitoring, control and protection panels/cubicles comprising of relays, MCBs, switches, displays, pneumatic gauges, sensors duly wired used therein as applicable. (list to be furnished by the Bidder)		Trainset	4										
14	Coupler: Auto (without electrical head); Semi-permanent;		Trainset	2										
15	Gangways Set comprising of single type (used within unit)		Trainset	2										
16	Master controller & mode selector		Set	4										
17	PWM Generator with interface panel		Set	4										
18	Main Motor Compressor Set for pneumatic system		Set	2										
19	Auxiliary motor compressor set		Set	2										
20	Air dryer		Set	2										
21	Secondary suspension complete set		Set	2										
22	Primary suspension		Bogie Set	4										
23	Brake control unit (Electronic and pneumatic) complete with brake application (actuator) units with brake pads.		Trainset	2										
24	Complete PA/ PIS and CCTV set including connectors but excluding interconnecting cable.		Trainset	3										
25	Complete saloon door operating mechanism		Set	2										
26	Saloon Air-conditioning Unit		Nos.	13										
27	TCMS Equipment set		Trainset	2										
28	WFL (complete with fasteners including holder and sticks)		Trainset	2										
29	Surge Arrestor		Nos.	5										
30	Fire detection Unit		Trainset	2										
31	Current Transformer		Set	5										
32	Potential Transformer		Set	5										
TOTAL(GA1)														

Mandatory Spares:

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S No.	Description	Part No.	Unit*	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
					F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
	HV Air Condition unit													
1	Microprocessor based control unit		Nos.	10										
2	Set of temperature sensor		Set	14										
3	Humidity sensor		Nos.	14										
4	Smoke sensor		Nos.	14										
5	Fresh & Return air Damper motors		Nos.	10										
6	Compressor		Nos.	14										
7	Condenser & Evaporator fans with motor		Nos.	14										
8	Emergency inverter with control unit		Nos.	10										
	Brake & Pneumatics													
# #	Set of PCB cards for Brake electronic control unit of each DM, T & M car		Set	2										
# #	Set of Power module card (for 3 car unit)		Set	2										
# #	Set of Input Output Card (for 3 car unit)		Set	2										
# #	Speed Sensor		No.	10										
# #	Brake actuator & Cylinder		Set	3										
# #	Set of pneumatic Valves (for three car unit)		Set	5										
# #	Set of magnet Valves (for three car unit)		Set	5										
# #	Set of safety Valves (for three car unit)		Set	5										
# #	Set of gauges (for three car unit)		Set	5										
# #	Set of Sensors (for three car unit)		Set	5										
# #	Set of Pressure switches (for three car unit)		Set	5										
# #	Set of Pressure governors (for three car unit)		Set	5										
# #	Set of all types of isolating cocks (for 3 car unit)		Set	5										
# #	Analog Converter		No.	10										
# #	Set of Pneumatic Pipe fittings (for three car unit)		Set	4										
	PA/PIS & CCTV													
# #	Set of PCB cards (for 3 car unit)		Trainset	5										
# #	Set of Power Module Cards (for 3 car unit)		Trainset	5										
# #	Set of Input Output Cards (for 3 car unit)		Trainset	5										
# #	Train Number Indicator		Trainset	10										
# #	Destination Indicator		Trainset	10										
# #	External side display board		No.	20										
# #	Amplifier		No.	10										
# #	Speaker		No.	20										
# #	Main operating Panel with Microphone		No.	10										
# #	Auxiliary operating panel		No.	5										
# #	Passenger emergency activation device		No.	10										
# #	Set of PSSS module without cable for three car unit		Set	5										
# #	LCD with LED backlit based Route Map & displays		Trainset	2										
# #	Saloon and rear view cameras complete with hardware interfaces cum control unit		Trainset	2										
	DOORS													
# #	Door control unit		No.	20										
# #	Door panels(pair)		No.	20										
# #	Door motor including gear mechanism if any		No.	20										
# #	Set of rollers		Set	34										
# #	Set of sensors/switches of saloon doors		Trainset	14										
# #	Cab-Saloon Partition door panels with locking mechanism		No.	14										

Mandatory Spares:

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S No.	Description	Part No.	Unit*	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
					F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
# #	Emergency door		No.	5										
# #	Emergency door operating mechanism		No.	5										
# #	Set of relays, contactors for Emergency door		Set	5										
##	Set of sensors/switches of emergency doors		Set	5										
Converter/Inverter														
# #	Set of PCB cards		Set	5										
# #	Power module card incl. IGBTs		No.	5										
# #	Input Output Card		No.	5										
# #	Set of Contactors		Set	5										
# #	Current Transformer		Trainset	4										
# #	Potential Transformer		No.	10										
# #	Power Unit		No.	10										
# #	Gate Control Unit		No.	10										
# #	DC link Charging circuit module		No.	7										
##	DC link capacitor		No.	10										
##	Earthing protection circuit module		No.	7										
Auxiliary Converter-Inverter														
# #	Set of PCB cards		Set	5										
# #	Power module card incl. IGBTs		No.	10										
# #	Input Output Card		No.	10										
# #	Set of Contactors		Set	10										
# #	Battery Charger		No.	5										
Transformer														
# #	Oil pump		No.	7										
# #	Radiator blower including fan		No.	7										
# #	Set of Valves & Relays		Set	10										
# #	Set of Sensors/Gauges		Set	10										
TCMS														
# #	Set of PCB cards (for 3 car unit)		Trainset	2										
# #	Display Unit		Trainset	7										
Master Controller														
# #	Set of Switches		Trainset	5										
# #	Potentiometer		Trainset	5										
Pantograph														
# #	Control panel		No.	7										
# #	Control Box having regulator, filter etc.		No.	7										
# #	Overhead detection valve		No.	7										
# #	Pantograph pan		No.	34										
# #	Pantograph Raising Cylinder		No.	10										
# #	Air Feed Insulator		No.	7										
# #	Pantograph foot insulator		No.	7										
Vacuum Circuit Breaker														
# #	Control box including auxiliary contact, pressure regulator etc.		No.	7										
# #	Set of sensors		Set	7										
Coupler														
# #	Proximity sensor		Trainset	2										
# #	Set of Pneumatic hoses		Trainset	2										
# #	Set of electrical jumpers with connectors (for 6 car train)		Trainset	2										
Bogie														
# #	Set of Dampers for bogie		Set	10										
# #	Monolink		No.	10										
# #	Axle boxes including bearing		No.	16										
# #	Drive gear unit complete with bearings and gear case		No.	6										

Mandatory Spares:

(*'Set' means as used in '3-car unit')

Set means as used in 3-car unit					Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
S No.	Description	Part No.	Unit*	Qty	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
Electrical Items														
# #	Set of luminaires - Head light, Tail light, Flasher light, Console light, Gangway light, saloon light complete with controllers and fittings etc.		Trainset	2										
# #	Complete headlight with lamp & housing		No.	14										
# #	Set of DC-DC converter		Set	7										
# #	Saloon light inverter/controller		No.	28										
# #	Earthing Ground Switch		No.	5										
# #	Lightening Arrestor		No.	5										
Miscellaneous Items														
1	Set of all hardwares - mounting, bolts, washers etc. for Converter/inverter		Set	5										
2	Set of all hardwares - mounting, bolts, washers etc. for Auxiliary converter		Set	5										
3	Set of all hardwares - mounting, bolts, washers etc. for pneumatic Compressors		Set	5										
4	Set of all hardwares - mounting, bolts, washers etc. for Transformer		Set	5										
5	Set of all hardwares - mounting, bolts, washers etc. for Air reservoirs		Set	5										
6	Set of all hardwares - mounting, bolts, washers etc. for Valve boxes		Set	10										
7	Set of all hardwares - mounting, bolts, washers etc. for Door		Set	10										
8	Set of all hardwares - mounting, bolts, washers etc. for Air conditioning unit		Set	10										
9	Set of all hardwares - mounting, bolts, washers etc. for Traction Motor		Set	10										
10	Set of all connectors with pins for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
11	Set of all relays for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
12	Set of all pushbuttons for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
13	Set of all contactors for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
14	Set of all MCBs for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
15	Set of all indicators for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
16	Set of all fuses for 3 car unit of MAKE A, B..... (Tenderer to specify)		Set	4										
17	Set of air filters for 3 car unit		Set	14										
18	Set of housing/casing/cover for tail light, console light, flasher light, gangway light for 3 car unit		Set	3										
19	Housing/casing/cover for saloon light		No.	14										
20	Set of Seats in Cab		Trainset	6										
21	Set of Glasses of Door & window.		Set	34										
22	Windshield glass		Trainset	14										
23	Battery Box		No.	2										
24	Draught Screen		No.	7										
25	Set of PCBs for FDU		Set	7										
TOTAL(GA2)														

Annexure - GA4**Consumable Spares for 378 cars (63 trainsets of 6 -car) for period up to expiry of DLP:-****(A) MANDATORY CONSUMABLE SPARES FOR 378 CARS (63 TRAINSETS OF 6 -CAR)**

S No.	Description	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
					F. C(I)	F. C(II)	L. C	F. C(I)	F. C(II)	L. C	F. C(I)	F. C(II)	L. C	
							(INR)			(INR)			(INR)	
1	Lubricants													
2	Oils													
3	Greases													
4	Sealants													
5	Brake Pads													
6	Filters													
7	Gaskets													
8	Lamps													
9	Pantograph Strips													
10	Other wearable parts													
11	Any other item whose declared life is less than one year													
TOTAL - GA4 (A)														

♦ Note: Bidder should furnish detailed list of items proposed as consumables

(B) RECOMMENDED CONSUMABLE SPARES FOR 378 CARS (63 TRAINSETS OF 6 -CAR)

S No.	Description	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
					F. C(I)	F. C(II)	L. C	F. C(I)	F. C(II)	L. C	F. C(I)	F. C(II)	L. C	
							(INR)			(INR)			(INR)	
TOTAL GA4(B)														
TOTAL GA4 (A + B)														

Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment:-

(A) MANDATORY SPECIAL TOOLS , JIGS ,FIXTURES, GAUGES, TESTING AND DIAGNOSTIC EQUIPMENT

[illegible]

Special Tools, Jigs, Fixtures, Gauges, Testing and Diagnostic Equipment:-**(A) MANDATORY SPECIAL TOOLS , JIGS ,FIXTURES, GAUGES, TESTING AND DIAGNOSTIC EQUIPMENT**

S No.	SYSTEM	EQUIPMENT	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
						F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
17	Wheel	(1) Handheld wheel profile measuring gauge, laser/opto electronic, complete with display computer, memory, sensors, remote data transmission etc. (2) Wheelset measuring gauges, back to back distance, ovality, taper run out, dia. etc.		Set	2										
18	Primary Suspension	Assembly tools Spring & damper Testing machine; damper repair tools, Repair tools for spheriblocks		Set	2										
19	Secondary Suspension	Suspension testing jig		Set	2										
20	Gangway	Gangway lifting jig		Set	2										
		Gangway handling trolley		Set	2										
21	Master Controller	Assembly/disassembly tools with calibration and test facilities		Set	2										
22	TCMS & Control electronics	Electronic card / Module tester; Softwares		Set	2										
23	Body	Body repair tools		Set	2										
24	Programming & Diagnostic tools	Laptop, Interface boards/accessories/ software and any other item required for meeting specification requirements, uploading/down loading & trouble shooting of propulsion, Vehicle/train non-propulsion & other equipments. - Upgradation software - DLP of software		Set	2										
25	Depot maintenance tools	Software tools for train equipment maintenance, monitoring equipment & Depot Management performance.		Set	2										
26	Others	Test/repair kits for optical fibre connectors if need, inter vehicular connectors, power & control cable and connectors.		Set	2										
27	Fire detection unit	Testing jig duly loaded with hardware/software as required for calibration & testing		Set	2										
TOTAL GA5 (A)															

NOTE:

1. Delivery of the items listed in Cost Centre 'GA5' shall be a prerequisite for accomplishment of the KD 6.1 .

However, exemption for Key Date delivery of certain items may be granted to the Contractor subjected to approval of the Engineer.

(B) RECOMMENDED SPECIAL TOOLS , JIGS ,FIXTURES, GAUGES, TESTING AND DIAGNOSTIC EQUIPMENT

S No.	SYSTEM	EQUIPMENT	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
						F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
TOTAL GA5 (B)															
TOTAL GA5 (A+B)															

NOTE:
1. Delivery of the items listed in Cost Centre 'GA5' shall be a prerequisite for accomplishment of the KD 6.1 .
However, exemption for Key Date delivery of certain items may be granted to the contractor subjected to approval of the Engineer.

Intermediate Overhauling Spares for 5 train Sets of 6-car:**(A) MANDATORY INTERMEDIATE OVERHAULING SPARES FOR 5 TRAINSETS OF 6 - CAR CONFIGURATION:**

S No.	SYSTEM	EQUIPMENT	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
						F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
1	Pantograph	Kit for overhauling of Pantograph, Raising cylinder, various items of Pantograph panel & control box													
2	VCB	Kit for overhauling of Vacuum Circuit Breaker & its control box													
3	Main Transformer	Kit for overhauling of various valves, oil pump & radiator fan													
4	Converter / Inverter	Kit for overhauling of contactors, relays etc.													
5	Auxiliary Inverter	Kit for overhauling of contactors, relays etc.													
6	Compressor	Kit for overhauling of Main & auxiliary compressor , Compressor test bench													
7	Pneumatics	Kit for overhauling of all Pneumatic valves & Magnet valves													
8	Axle Boxes	Kit for overhauling of Axle boxes													
9	Drive Gear	Kit for overhauling of Drive gear													
10	Air Condition (Cab & Saloon)	Kit for overhauling of valves, relays etc.													
11	Door	Kit for overhauling of operating mechanism of door													
12	Bogie	Kit for overhauling of Bogie including bushes, pins etc.													
13	Brake	Kit for overhauling of tread brake unit													
14	Master Controller	Kit for overhauling of Master Controller													
15	Coupler	Kit for overhauling of valves.													
TOTAL GA6 (A)															

(B) RECOMMENDED INTERMEDIATE OVERHAULING SPARES FOR 5 TRAINSETS OF 6 -CAR CONFIGURATION:

S No.	SYSTEM	EQUIPMENT	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
						F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	F. C(I)	F. C(II)	L. C (INR)	
TOTAL GA6 (B)															
TOTAL GA6 (A+B)															

Annexure - G-DLP
List of Spares (minimum) that will be stocked by the Contractor during DLP for commissioning and DLP obligations (not a part of Cost Centre 'G').

S No.	SYSTEM	EQUIPMENT	Part No.	Unit	Qty	Unit Cost			Total Cost			Escalation p.a (%)			REMARKS
						F. C(I)	F. C(II)	L. C	F. C(I)	F. C(II)	L. C	F. C(I)	F. C(II)	L. C	
								(INR)			(INR)			(INR)	